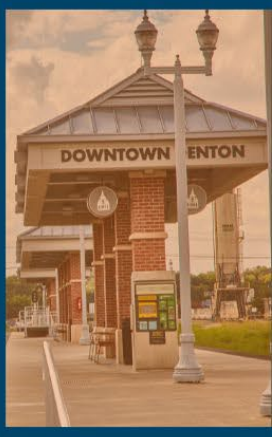
Task 7 Report: Review of Fare Collection Strategies to Increase Ridership without Lowering Revenues

Final

REGIONAL TRANSIT 2.0



North Central Texas Council of Governments

March 26, 2025

Executive Summary

Introduction

The Dallas-Fort Worth Region is at a crucial point in its transit evolution, with the North Central Texas Council of Governments (NCTCOG) coordinating efforts across Dallas Area Rapid Transit (DART), Trinity Metro, and Denton County Transportation Authority (DCTA). This technical memorandum provides specific recommendations to enhance fare collection, ridership, and integration across DART, Trinity Metro, and DCTA. Analyzing current practices and successful implementations worldwide, it delivers actionable recommendations to improve ridership, customer experience, and revenue through innovative fare programs, payment systems, and emerging technologies.

A comprehensive methodology incorporating industry research and a literature review, stakeholder interviews, and detailed data analysis to evaluate fare collection strategies across the three agencies. The assessment includes a comparative analysis of the three agencies' current fare structures and payment systems, highlighting areas of alignment and divergence. The study examines the benefits and limitations of existing fare collection approaches while identifying successful practices from transit systems worldwide that could benefit the NCTCOG region. Special attention is given to regional coordination and integration opportunities, considering each agency's practical constraints and operational requirements while focusing on improving the rider experience and system efficiency.

Analysis of Current Fare Programs and Systems

The three major transit agencies in the DFW region offer a diverse range of fare programs designed to meet the needs of its growing and varied population. This section explores the current fare structures employed by these transit agencies, highlighting their benefits and limitations. Current fare programs range from traditional time-based passes and demographic-specific discounts to employer-sponsored programs and promotional fares. **While initiatives like the regional pass program demonstrate progress toward fare integration**, significant opportunities exist to further streamline fare structures across agencies. Current fragmentation in fare products and policies creates friction for riders using multiple transit services, highlighting the need for enhanced coordination and innovative solutions that could make regional transit travel more seamless and user-friendly. The major highlights of this section are as follows:

Traditional Payment Methods: While cash and paper-based tickets create slower boarding times, higher operational costs, and limited data collection, they remain essential for accessibility. Approximately 40% of DART bus riders still use cash, serving transit-dependent and unbanked populations who may lack bank accounts, smartphones, or comfort with digital technologies.

Card-Based Systems: The region utilizes a mix of magnetic stripe and contactless smart cards, with the GoPass Tap card being the most prevalent. These systems offer faster boarding and support advanced fare policies but require significant upgrades to achieve regional interoperability.

Mobile and Digital Payments: The GoPass app provides mobile ticketing, but the implementation of digital/mobility wallets and other contactless options varies across agencies.

Account-Based Ticketing: The GoPass platform supports account-based ticketing, but multiple parallel systems exist, creating fragmentation and hindering a unified customer experience.

Evaluation of Potential Inclusions

The analysis of potential inclusions involves the assessment of possible regional fare initiatives against key goals: improving rider experience, increasing transit accessibility, optimizing revenue generation, and reducing barriers to seamless regional travel across multiple agencies. Prominent findings are as enumerated below:

Regional Rewards/Loyalty Program: Developing a unified, points-based rewards system across all regional transit agencies would transform rider engagement from transactional to membership-oriented, creating an expanded benefits ecosystem through strategic partnerships with local businesses, rideshare companies, and transportation providers. This program would incentivize frequent and cross-agency transit usage while providing valuable ridership data to inform service improvements throughout the NCTCOG Region.

Regional Fare Capping: Implementing regional fare capping across all agencies would ensure equitable fare optimization and benefit riders using multiple services.

Integrated Commercial Partnership Programs: Regional partnerships across DART, Trinity Metro, and DCTA would create standardized corporate programs and targeted initiatives, enhancing service delivery while streamlining administration through GoPass integration.

Safe Contactless and Open-Loop Payment Systems: Expanding contactless payment infrastructure and open-loop systems would create a seamless and unified regional payment ecosystem.

Regional Microtransit Integration: Integrating microtransit services into a unified platform, such as GoPass, would bridge gaps between fixed-route services and expand transit access.

Review of Strategic Factors

An analysis of significant operational aspects across the NCTCOG region, focusing on safety, parking, equity, and fare coordination, was carried out as below:

Safety and Security: The DFW Region faces comprehensive security challenges across its open transit system, requiring a multi-faceted approach. Environmental design, station activations, technology solutions, and coordinated fare enforcement efforts, combined with transit ambassadors and behavioral strategies, can enhance security for both riders and operators while maintaining accessibility and improving fare compliance.

Parking Policies: Parking policies play a crucial role in attracting and retaining transit riders, especially in suburban areas. Given the underutilization of parking assets, there is an opportunity to leverage these resources to encourage ridership growth.

Equity Considerations: It is vital to maintain equity in fare structures, service provision, and access for diverse populations. This includes going beyond federal requirements and addressing geographic, socioeconomic, demographic, and operational equity to ensure the transit system remains accessible and affordable for all.

Overall Recommendations

By prioritizing the following recommendations, the NCTCOG region can create a more integrated, efficient, and user-friendly transit system that serves the diverse needs of its residents:

Regional Fare and Rewards Programs: Implement a comprehensive approach that combines unified real-time fare capping with a points-based rewards system across all regional transit agencies, ensuring riders never pay more than optimal fares while transforming engagement from transactional to membership-oriented. This integrated strategy would both optimize fare equity for occasional riders and incentivize frequent transit usage, particularly benefiting those traveling across multiple agencies while generating valuable data to inform service improvements throughout the region.

Fare Payment System Enhancements: Expand contactless and open-loop payment systems, integrate account-based ticketing at a regional level, focus on regional integration and interoperability, and prioritize an equity-centered approach to regional fare policy.

Microtransit Integration: Integrate microtransit services into a unified regional mobility network, focusing on bridging gaps between fixed-route services and expanding access to non-member cities.

Address Operational Challenges: Develop comprehensive strategies to address homelessness, enhance security & fare enforcement, respond to behavioral health

incidents, address regional disparities, and create consistent service standards across agencies.

Parking Management: Promote existing parking resources, develop regional access solutions, and implement strategic revenue generation through selective paid parking at high-demand locations.

The technical memorandum provides the vision of a more seamless and efficient transit experience for riders, encouraging them to use the system more frequently and across a broader range of services. This, in turn, would lead to increased ridership and revenue for the transit agencies, supporting their long-term financial sustainability and allowing for continued investment in service improvements.

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LIST OF EXHIBITS

1. Introduction

The Dallas-Fort Worth region stands at a critical juncture in its transit evolution, with NCTCOG playing a pivotal role in coordinating efforts across DART, Trinity Metro, and DCTA (collectively referred to as "TA(s)"). With current projections forecasting an influx of 4,000,000 new residents and 3,000,000 additional jobs in the region over the next 20 to 30 years, the need for seamless regional connectivity has become increasingly urgent. This technical memorandum examines fare collection strategies across the NCTCOG region's transit agencies and provides specific recommendations for enhancing regional transit operations. Through analysis of fare programs, payment systems, and emerging technologies, this assessment identifies opportunities to improve both ridership and customer experience. Drawing from successful implementations worldwide, this study delivers actionable recommendations for revenue growth while considering North Central Texas's unique geographic and demographic characteristics. The findings and proposed solutions focus on innovative approaches - from reward programs to advanced payment technologies - that could transform how DART, Trinity Metro, and DCTA serve their growing ridership base through enhanced regional integration.

Through a comprehensive methodology incorporating industry research and literature review, stakeholder interviews, and detailed data analysis, this study evaluates fare collection strategies across DART, Trinity Metro, and DCTA, the three TAs in the NCTCOG region. The assessment includes a comparative analysis of the three agencies' current fare structures and payment systems, highlighting areas of alignment and divergence. The study examines the benefits and limitations of existing fare collection approaches while identifying successful practices from transit systems worldwide that could benefit the NCTCOG region. Special attention is given to regional coordination and integration opportunities, considering each agency's practical constraints and operational requirements while focusing on improving the rider experience and system efficiency.

The analysis and proposed solutions presented in this memo combine practical insights from transit professionals with a detailed study of system information and industry trends. The evaluation encompasses critical considerations, including safety and security, parking policies, and equity implications of various fare strategies. By examining these elements through the lens of regional coordination, this analysis aims to provide recommendations for enhancing fare collection across the region while supporting NCTCOG's broader transportation goals. Particular emphasis is placed on solutions that promote regional connectivity while respecting each transit agency's autonomy and unique needs.

2. Methodology

2.1 Industry Trends and Research Review

The analysis begins with a comprehensive review and study of fare programs and systems in the NCTCOG Region and relevant collection strategies across North American and international transit agencies. This memo focuses on emerging trends in fare programs, payment technologies, and best practices that could be relevant to the NCTCOG region. Key areas of investigation include fare-capping implementations, loyalty programs, account-based ticketing systems, and mobile payment solutions. Special attention is given to regions with multiple transit agencies and demographic characteristics similar to those of the DFW region for drawing out relatable comparisons. The review examines successful implementations of regional fare integration, technological innovations in fare collection, and strategies for increasing ridership while maintaining revenue. Examples of transit agencies that have successfully implemented innovative fare programs can provide insights into potential applications for DART, Trinity Metro, and DCTA. To enhance this report and provide readers with access to relevant resources, superscript notes have been included throughout the text. These notes correspond to URLs containing more detailed information, allowing for a deeper dive into specific topics and data sources. A comprehensive list of URL references has been attached in Appendix A.

2.2 Interviews

The study incorporates structured interviews with key DART, Trinity Metro, and DCTA stakeholders to understand their current fare collection practices, challenges, and future plans. These interviews captured insights from multiple organizational levels, including executive leadership's strategic vision, technology teams' system capabilities assessment, operations staff's daily experiences, and customer service feedback on rider issues.

Additional perspectives were gathered through interviews with Subject Matter Experts (SMEs) to provide broader industry context and technical expertise. These include fare system technology providers and transit consultants with regional integration experience. These SME interviews offered valuable insights into emerging technologies, best practices for regional fare integration, and innovative approaches to common challenges faced in multi-agency transit environments.

2.3 Data Analysis

The data analysis provided key insights regarding fare structures and programs in the NCTCOG region as well as resource utilization and service delivery challenges. This understanding enabled the development of prioritized solutions targeting critical issues within fare/ridership management from a regional perspective. A further insight thus emerges wherein agencies can better allocate resources and implement improvements to

enhance overall service quality and user experience while keeping fare revenue steady and encouraging more people to use transit. These insights will be explored explicitly through various sections of the tech memo.

The technical assessment includes current system capabilities and the possibility of integration across agencies, while operational analysis focuses on rider convenience, fare management, and regional integration. This data-driven approach helps identify specific regional needs and constraints, ultimately informing recommendations for enhanced fare collection strategies that align with NCTCOG's broader transportation goals.

3. Analysis of Fare Collection Strategies

As NCTCOG pursues greater regional alignment, analyzing fare collection strategies becomes crucial for creating a seamless, integrated transit experience. This comprehensive assessment examines current fare programs and payment systems across the three TAs and also highlights some emerging technologies, evaluating their effectiveness in supporting regional connectivity while maintaining individual operational requirements. By understanding existing systems, exploring global best practices, and identifying innovative solutions, this analysis aims to provide actionable insights for enhancing regional integration while ensuring equitable access and operational sustainability across the NCTCOG region. Emphasis has been provided to opportunities that strengthen cross-agency coordination and improve the overall transit experience for regional residents.

3.1 Fare Programs

The Dallas-Fort Worth region's public transportation network presents both unique challenges and opportunities in fare program implementation. This comprehensive analysis examines the current state of fare programs across these agencies, evaluating their effectiveness, identifying limitations, and exploring potential opportunities. The assessment begins with a detailed review of existing fare structures and programs, then transitions to examining global best practices in transit fare programs, highlighting innovative solutions and successful implementations from leading transit agencies worldwide. Drawing from these insights, the final section presents targeted recommendations for potential inclusions and enhancements to the region's fare programs.

3.1.1 Current Programs - Benefits and Limitations

The three transit agencies in the region offer a diverse range of fare programs designed to meet the needs of its growing and varied population. This section explores the current fare structures employed by these transit agencies, highlighting their benefits and limitations. Current fare programs range from traditional time-based passes and demographic-specific discounts to employer-sponsored programs and promotional fares. **While some programs, such as the regional pass program, demonstrate successful alignment intent**, others reveal opportunities for enhancement and innovation. This section analyzes the existing fare programs across these agencies, examining their benefits and limitations. By understanding the region's current state of fare programs, including their strengths and challenges, we can better identify opportunities for improvement and potential areas for enhanced regional coordination. Relevant examples of impactful Fare Programs have been covered in the ‘Best Practices’ section.

3.1.1.1 Time-Based Passes

Pass	DART (Effective Mar 2025)	Trinity Metro	DCTA
Single-ride Fare (Local)	3-Hour Pass: Regular- **$3**/ Reduced- **$1.50**	**Regular- $2/ Reduced- $1**	Regular- **$1.5**/ Reduced- **$0.75**
Day Pass	• Local: Regular- **$6**/ Reduced- **$3** • Regional: **Regular- $12/ Reduced- $3**	• Local: Regular- **$4**/ Reduced- **$2** • Regional: Regular- **$12**/ Reduced- **$3**	• Local: Regular- **$3**/ Reduced- **$1.50** • Regional: Regular- **$12**/ Reduced- **$3**
Weekly Pass	Not explicitly offered	**Regular- $18/ Reduced- $9** (Local Only)	10-Pack of Day Passes: • Local- **$20**/ Regional- **$84** (No Reduced Option)
Monthly Pass	• Local: Regular- **$126**/ Reduced- **$63** • Regional: **Regular- $192/ Reduced- NA**	• Local: None[#] • Regional: **Regular- $192**/ Reduced- **$48**	• Local: **Regular- $48/ Reduced- $24** • Regional: **Regular- $192**/ Reduced- **$48**
Annual Pass	• **Local: Available only for Seniors** • **Regional: Regular- $1920/ Reduced- $576**	• Local: None[#] • Regional: **Regular- $1920/ Reduced- $576**	• Local: Regular- **$480/** Reduced- **$240** Regional: Regular- **$1920/** Reduced- **$576**
Benefits	• Regional consistency for Day & Monthly Regular Passes: Unified pricing, policies, and passes across agencies via GoPass platform • Flexible fare options: Diverse pass durations and coverage at various price points		
Limitations	• Fare inconsistencies: Varying products and pricing across agencies • Regional integration gaps: Misaligned fare products, pricing, and pass periods • Structural challenges: Complex pricing, varied zones, coverage, and transfer policies across agencies • User experience issues: Multiple fare structures[%], rules, and validation requirements across TAs • Regional Pass Avoidance: Purchasing separate local day passes for DART ($6) and Trinity Metro ($4) totals $10, making it a more economical option than buying a Regional Day Pass for $12		

*Regular Regional Day/Monthly Pass/Annual have been standardized amongst the three TAs

[#]Trinity Metro currently restricts monthly and annual passes to EASYRIDE participants only, with these local-only passes differing significantly from regional fare options.

[%]Additionally, certain services like DCTA's microtransit operate under entirely separate fare structures from their time-based fare system, further complicating the regional fare landscape.

Assessment

Key Issues	Critical Implications	Action Needed
• Despite regional passes being consistent, significant disparities exist in local fares • Weekly pass options vary dramatically between agencies • Transfer policies and special programs lack standardization	• Confusing rider experience when using multiple agencies • Barriers to seamless regional travel • Missed opportunities for revenue optimization	• Standardize local fare structures while maintaining regional pass consistency • Align pass types and durations across agencies • Create unified transfer and special program policies • Leverage GoPass platform for seamless integration

3.1.1.2 Demographic-Specific Discounts

Discount	DART	Trinity Metro	DCTA
Student Discount	Reduced fares for high school students with a valid DART Service Area high school ID Reduced fares for youth ages 5-14 Undergraduate or trade school students enrolled at participating schools are eligible for free rides	• Free for Students with IDs - Tarrant County College (EASYRIDE Program) • Reduced fares for youth ages 5-19	Half-priced semester and annual passes for students and faculty; Local as well as Regional
Senior Discounts/ Individuals with Disabilities	Reduced fares on all services for seniors aged 65 and older. Similarly, for individuals with disabilities	Reduced fares on all services for seniors aged 65 and older. Similarly, for individuals with disabilities	Reduced fares on all services for seniors aged 65 and older. Similarly, for individuals with disabilities
Military/ Veteran discounts	Reduced fares	Reduced fares	Free rides to veterans on Veterans Day
Low-Income Fare Programs	Reduced fares on all services for individuals who qualify based on income - Discount GoPass® Tap card program	No specific fare structure dedicated exclusively to low-income riders*	Does not consider income as a criterion in its fare structure#

Employer-sponsored passes	Corporate/Employee Pass Program at 25% discount	Passes exclusively available to EASYRIDE partners	Employee Pass Program- discounted annual passes for Denton County-based businesses
Benefits	• Comprehensive coverage: Consistent discounts for seniors, veterans, and individuals with disabilities across agencies • Social equity focus: Strong support for riders with disabilities, students, veterans, and accessibility initiatives • Program accessibility: Clear eligibility criteria and multiple qualifying options • Employer programs: Corporate discounts and varied partnership models for regional and local businesses		
Limitations	• Program inconsistency: Varied structures, benefits, discount rates, and names for special programs across agencies • Regional integration gaps: Difficult to coordinate, varied partnerships, and inconsistent programs across agencies • User experience challenges: Multiple enrollment processes, verifications, and complex eligibility criteria across agencies		

*Trinity Metro collaborates with several agencies throughout Tarrant County to assist potential riders in various situations, including those with low-income needs, but this is not included in the Trinity Metro Fare Policy.

#DCTA provides reduced fare passes to nonprofits (excluding GoZone), which may be used to serve low-income customers. However, DCTA does not audit the use of passes after sale.

Assessment

Key Issues	Critical Implications	Action Needed
• Each agency maintains separate verification processes • Program names and structures vary across agencies • No unified approach to employer partnerships • Different enrollment systems for each agency	• Confusing experience for multi-agency riders • Higher administrative costs from duplicate systems • Reduced program effectiveness due to complexity • Barriers to regional employers seeking partnerships • Limited ability to track program success across the region	• Standardize discount rates and eligibility requirements • Create a unified verification process through GoPass platform or a similar mechanism • Implement consistent program naming and structure • Develop a single enrollment system for all agencies • Establish a coordinated regional partnership program

3.1.1.3 Dynamic and Flexible Pricing

Programs	DART	Trinity Metro	DCTA
Fare capping	Offered via GoPass Tap Card and mobile app - *never pay more than the **cost** of a day pass ($6) or a monthly pass ($192) within those periods, unlimited rides*	• Fare capping on GoPass Tap card and mobile app • Day/ Weekly Pass - *after paying for two rides ($2.00/$1.00 each), all remaining rides are free for the day; after reaching 7-day pass equivalent ($18.00/$9.00), all rides for that 7-day period are free.*	Only as Day/ 10-Day Pass
Peak/off-peak pricing	Not offered post implementation of new fare structure – Spring 2025	Not offered	Not offered
Distance-based pricing	Not Offered	Used explicitly for microtransit services	Used explicitly for microtransit services
Zone-based pricing	Limited form of distance-based pricing for TRE. Fares are based on local vs. regional trip	Limited form of distance-based pricing for TRE. Fares are based on local vs. regional trip	GoZone (In Denton) • $1.50 per passenger for trips up to four miles • Additional $0.50 per mile up to a cap of $5.00 GoZone (In Lewisville/Highland Village/Castle Hills) • $1.50 per passenger flat rate per trip GoZone rides in all zones covered by GoZone eligible DCTA passes
Benefits	• User cost management: Automatic fare optimization, daily/monthly caps, flexible options, and cost control mechanisms • Technology foundation: GoPass platform with digital infrastructure, mobile integration, and real-time processing		
Limitations	• Limited regional implementation: Inconsistent fare capping, technologies, and pricing models across agencies • Operational constraints: Complex fares, limited coordination, and varied technological readiness across agencies • Program gaps: Lack of distance-based pricing, limited time-based options, minimal dynamic pricing, and inconsistent zones		

Assessment

Key Issues	Critical Implications	Action Needed
• Only DART implemented comprehensive fare capping; Trinity Metro has implemented the same partially • Inconsistent pricing structures across agencies • Varying levels of technological readiness	• Riders can't benefit from fare optimization across agencies • Lost opportunities for travel demand management • Underutilized revenue optimization potential • Fragmented user experience across systems • Limited ability to track and communicate rider savings	• Standardize fare capping across all agencies • Implement a unified zone-based pricing structure • Create rider savings tracking and communication system • Leverage GoPass platform for regional integration

3.1.1.4 Loyalty & Reward / Promotional Programs / Special Event Fares

Programs	DART	Trinity Metro	DCTA
Event-Based Pricing	• Occasionally implemented - typically integrated into day or group passes • Free for major local/national events	• Free for major local/national events • For Local Attractions and Events: – Friday on the Green – ArtsGoggle – Christmas Capital of Texas (Grapevine)	• Occasionally - focused on local events or festivals • Free for major local/national events (State Fair of Texas Combo Deal)
Gifts/ Special Offers/ Discount Programs	• Customer Promotions • Bulk sale discount programs • Route Promotion Pass	• Fare-Free First Fridays (Summer)	Not explicitly offered
Points-Based Rewards Program	Not explicitly offered	Not explicitly offered	Not explicitly offered
Tourist passes	Not explicitly offered	Not explicitly offered	Not explicitly offered
Benefits	• Promotes regional transit usage during major events • Support regional equity goals through targeted discounts • Incentivizes consistent transit use across agencies • Creates opportunities for regional business partnerships • Provides flexibility for targeted promotions		
Limitations	• Complex revenue-sharing requirements		

	• Regional integration gaps: Limited cross-promotion, varied event policies, and inconsistent service levels across agencies • Lack of unified rewards or points-based loyalty programs • Minimal cross-agency promotional integration • Varied approaches to event partnerships and special pricing • Limited ongoing customer loyalty incentives beyond occasional promotions • Requires significant technological integration • Complex program administration needs • Need for unified customer data management • Challenging cost allocation between agencies

Assessment

Key Issues	Critical Implications	Action Needed
• Absence of regional rewards/loyalty programs • Varied approaches to event partnerships and special pricing • Limited cross-agency promotional integration • No unified approach to special event services • Complex revenue-sharing requirements between agencies	• Lost opportunities for regional revenue generation • Missed chances for customer loyalty building • Fragmented promotional messaging • Inconsistent user experience across the regional transit system • Inefficient allocation of resources for promotional activities	• Develop a unified event pricing framework through GoPass • Create a regional loyalty program with points-based rewards • Implement standardized tourist passes • Design and coordinated regional marketing strategy

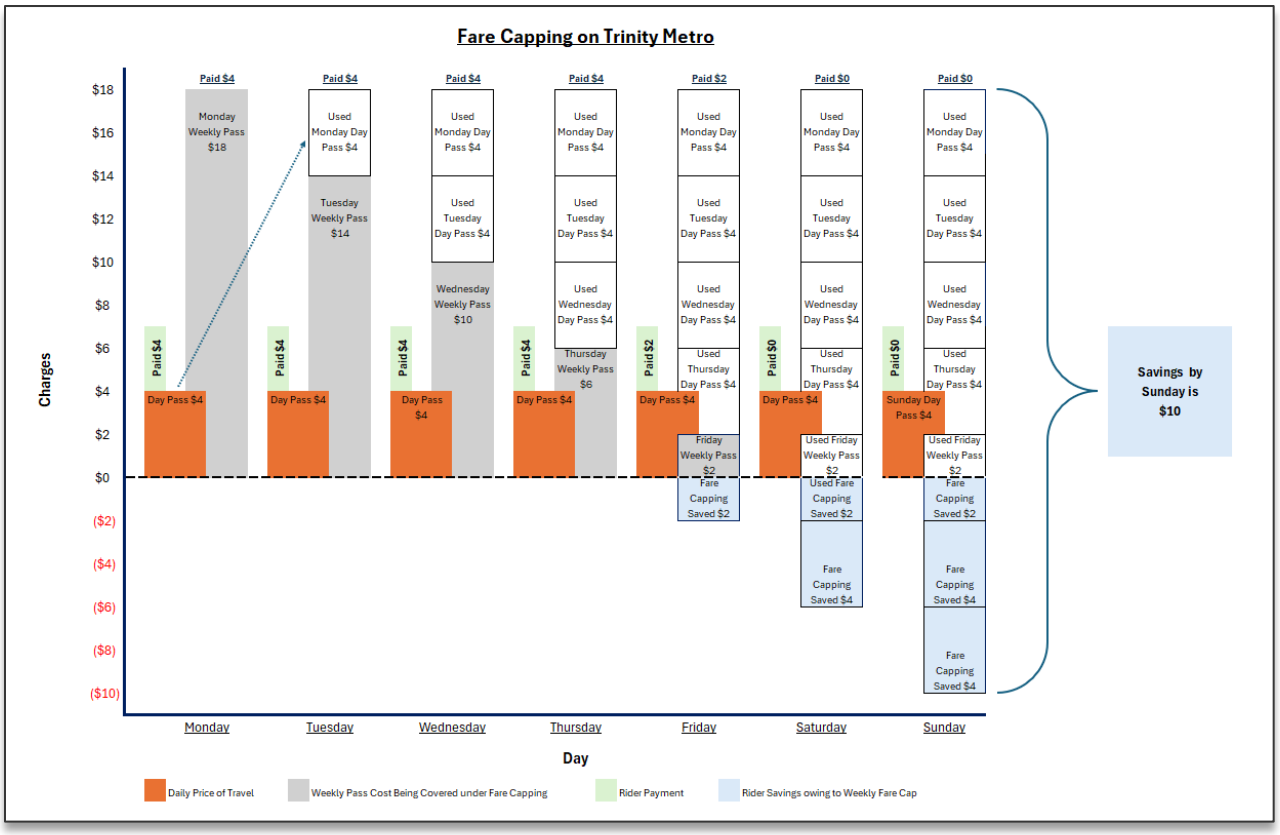
3.1.2 Best Practices

Transit fare programs have evolved significantly in recent years, with agencies worldwide implementing innovative approaches to enhance ridership, improve accessibility, and optimize system utilization. Best practices in fare programs now extend far beyond traditional payment collection to encompass sophisticated solutions that address multiple objectives: social equity, environmental sustainability, operational efficiency, and enhanced user experience. Several key strategies have emerged as particularly effective from successful implementations across global transit systems. Specific approaches demonstrated through successful real-world applications offer valuable insights for transit agencies seeking to modernize their fare systems while balancing social responsibility with operational sustainability. The analysis in this section examines these best practices in detail, highlighting their implementation strategies, measurable impacts, and potential applications for transit agencies looking to enhance their fare programs.

3.1.2.1 Fare Capping

Fare capping has emerged as a transformative approach to transit fare collection that promotes equity and encourages increased ridership through automated fare optimization. This system automatically limits how much riders pay for their trips within a specified timeframe, ensuring they never pay more than the cost of a longer-duration eligible pass or an unlimited pass, even without the upfront financial burden of purchasing one. Recent research from the University of Tennessee demonstrates its significant impact, with agencies implementing monthly fare capping seeing increases of 3.6% to 4.1% in annual bus ridership[1]. New York's MTA reported saving commuters over $1 million in the first month of implementing weekly fare capping through its OMNY system. Portland's TriMet system provides another successful example: fare capping has helped address equity concerns while maintaining revenue stability. The effectiveness is particularly evident when combined with contactless payment options, with Visa's Future of Urban Mobility Survey indicating that 61% of surveyed public transit riders would increase their transit use with fare capping[2]. This approach not only makes public transit more affordable and accessible but also streamlines the fare system for both agencies and riders, leading to increased system utilization and improved customer satisfaction. The growing adoption of fare capping across major transit systems demonstrates its potential as a key strategy for modernizing fare collection while promoting equitable access to transit. As an example, Exhibit 1 shows how the purchase of day passes on a daily basis (based on the number or location or taps and scans when boarding or boarding and exiting a mode of transit) contributes to fare-capping benefits to a rider on Trinity Metro, which charges $18 for a weekly pass. Once a pass is earned, the remaining trips for that pass period are then free to the rider.

Exhibit 1: Weekly Fare Capping for Transit Riders



Key Elements:

- Automatic fare optimization - Best fare automatically applied based on usage
- Daily/weekly/monthly caps
- Integration with existing fare systems
- Enhanced affordability and equity, leading to increased ridership
- Cost transparency between fare types

3.1.2.2 Loyalty & Rewards Programs

Transit loyalty and rewards programs offer an innovative way to boost ridership and retain regular users through meaningful incentives. By offering concrete benefits like ride credits, retail discounts, and premium services, these programs create real value for frequent riders. A commuter might earn $5 in ride credits after 20 trips, enjoy free coffee at station vendors after 10 rides, or receive retail discounts at partner businesses. These rewards deliver immediate, measurable savings while providing tangible perks such as priority parking and access to premium waiting areas during delays. Such benefits not only reduce actual costs for users but also encourage consistent transit use

by making the rewards both visible and valuable. These programs transform the traditional transit payment relationship into an engaging customer experience that builds long-term rider loyalty. Montreal's STM Merci! Program stands as a pioneering example, where the combination of location-based technology and retail partnerships resulted in a 20-25% increase in transit ridership among participants and generated nearly $100 million in new revenue over three years[3]. The program's success stemmed from its ability to offer personalized rewards based on riding patterns, providing merchant discounts of up to 50% for frequent riders, and creating an engaging mobile platform that transformed routine transit use into a rewarding experience. Singapore's current Travel Smart Journeys (TSJ)[4] program showcases an innovative approach to transit incentives. The program rewards commuters with points worth up to 80% of their fare for choosing off-peak travel times or alternative routes. Launched in 2025, this evolved version of their earlier Travel Smart Rewards program integrates with their SimplyGo mobile app, offering automated point accumulation and seamless conversion to transit credits.

Key Elements:

- Points-based reward accumulation
- Merchant partnerships and discounts
- Gamification elements
- Personalized offers and incentives

3.1.2.3 Robust Discount Programs

Robust discount programs have emerged as a crucial strategy for transit agencies to ensure equitable access while building sustained ridership across diverse demographic segments. These comprehensive programs go beyond traditional senior and student discounts to address broader socioeconomic needs and create lasting connections with key rider groups. King County Metro's pioneering ORCA LIFT program in Seattle demonstrates the transformative potential of well-designed discount programs, offering income-based fares that provide a 45% fare reduction to eligible riders across multiple transit agencies. Since its 2015 launch, the program has served over 100,000 riders, increased transit usage among low-income populations by 40%, and become a national model for equity-focused fare programs5. Similarly, Los Angeles Metro's comprehensive discount structure includes innovative elements like their LIFE (Low-Income Fare is Easy) program, student, and U-Pass programs, and veteran benefits, resulting in a 32% increase in program enrollment and improved accessibility across their system6. These initiatives showcase how strategically designed discount programs can simultaneously address social equity goals while building stable ridership bases. Potential program improvements based the examples quoted, for the DFW region include:

- **Simplified Income Verification**: Streamlined, centralized system similar to ORCA LIFT's user-friendly process.

- **Automatic Enrollment Options**: Integration with existing assistance programs as in LA Metro's LIFE program.
- **Universal Student Pass Program**: Region-wide U-Pass model with institutional partnerships.
- **Mobile Integration**: Seamless discount program access within the GoPass platform.
- **Data-Driven Evaluation**: Robust tracking of program impacts on ridership and equity.
- **Community Partnerships**: Collaboration with trusted local organizations for outreach and enrollment.

Key Elements:
- Targeted discounts for specific demographics
- Easy enrollment processes
- Include Income Based/Student/Senior/Disability/Veteran/Corporate/Institutional Programs

3.1.2.4 Integrated Commercial Partnership Programs

Commercial partnerships across DART, Trinity Metro, and DCTA represent a strategic opportunity to enhance regional transit accessibility while fostering business relationships through coordinated program offerings. Building on successful initiatives like DART's Corporate Pass Program, Trinity Metro's EASYRIDE, and DCTA's Employee Pass Program, a unified regional approach would standardize benefits and streamline administration through the GoPass platform. DART's successful collaboration with Toyota[7] in developing transit-oriented solutions for their North American headquarters in Plano demonstrates the potential of customized corporate partnerships. Meanwhile, the Bay Area's Clipper BayPass[8] program shows how a unified regional system can serve diverse stakeholders, from major employers to educational institutions and affordable housing communities, through a single integrated platform. These examples illustrate how well-structured regional partnership programs can enhance transit accessibility, support diverse business community needs, and drive consistent ridership growth while maintaining operational efficiency through standardized administration.

Key Elements:
- Regional program standardization across agencies
- Unified corporate engagement and outreach strategy
- Integrated GoPass platform administration
- Coordinated benefit structures and pricing models
- Streamlined enrollment and management processes

3.1.2.5 Sustainability and Environmental Incentives Programs

Sustainability and environmental incentive programs represent an approach to fare policy that aligns transit ridership with broader transportation goals while creating value propositions for riders concerned with efficiency and reduced congestion. These

programs can promote transit use through practical incentives and community benefits. Luxembourg's nationwide public transport initiative resulted in private vehicle use falling by 11% while public transportation ridership increased by 25%[9]. Denver's time-limited "Zero Fare for Better Air" initiative provided free transit during specific periods to address congestion and air quality concerns[10]. Such targeted programs can complement traditional fare strategies by appealing to specific rider segments, enhancing mobility options during high-congestion periods, and supporting regional transportation system efficiency. The most effective approach typically involves positioning these programs within established transportation frameworks and focusing messaging on practical benefits like reduced travel times and improved accessibility.

Key Elements:

- Targeted Congestion Reduction Initiatives
- Practical Mobility Incentives
- Community Transportation Goals Integration
- Usage Impact Metrics

3.1.3 Potential Inclusions for NCTCOG

Regional fare integration through coordinated rewards programs, fare capping, and well-established commercial partnerships present transformative opportunities for enhancing transit accessibility and equity across the region. The following could be potential inclusions for the NCTCOG region:

- **Regional Transit Rewards/Loyalty Program**: The Dallas- Fort Worth region presents a unique opportunity to revolutionize the regional transit experience through an integrated loyalty program that transforms how residents engage with public transportation. While DART, Trinity Metro, and DCTA currently offer basic interoperability through the GoPass system, none have implemented true loyalty-based incentives beyond traditional volume discounts and corporate partnerships. A comprehensive regional rewards program could elevate transit from transaction-based interactions to a membership-oriented service model similar to popular subscription services that have transformed other industries. This initiative would create a unified points-based system where users earn rewards across all regional transit providers regardless of which service they use, with bonus incentives for multi-agency journeys. Riders could accumulate points for every trip taken, with enhanced earnings for traveling during off-peak hours, connecting between different services, or consistently using transit over time. These points could then be redeemed for free rides, service upgrades, or exclusive benefits through an expanded network of regional partnerships.

The Regional Transit Rewards/Loyalty Program would significantly amplify its value proposition through strategic partnerships with local retailers, restaurants, cultural venues, and other transportation providers. By forming alliances with rideshare companies like Uber and Lyft, the program could offer first/last mile connection credits, while partnerships with airlines could allow point transfers or special benefits for airport transit users. Local business partnerships could provide exclusive discounts or special offers to transit loyalty members, creating a comprehensive regional benefits ecosystem that enhances the overall value of transit usage. Building upon this foundation, a unified regional discount program framework would be seamlessly integrated into the same comprehensive mobility wallet system, significantly enhancing both loyalty benefits and social equity across the region. By standardizing eligibility criteria, verification processes, and discount rates for students, seniors, veterans, and low-income riders across all three agencies, the program would eliminate current inconsistencies while maintaining personalized benefits based on eligibility status.

Qualified discount program participants would automatically receive their appropriate fare reductions while simultaneously earning loyalty points, ensuring that equity programs and rewards systems work in tandem rather than as separate initiatives. This would particularly benefit riders who travel across multiple agencies, as their discount status would be universally recognized throughout the region. A particularly innovative component would be the RTC's proposed initiative to purchase transit passes for new employees relocating along rail corridors, simultaneously addressing workforce development, congestion reduction, and ridership goals. By consolidating fragmented approaches currently in place and creating a true "membership" mindset across the region, the program would foster regional identity while generating valuable user data to inform future service enhancements. The streamlined administration through the GoPass mobility wallet would reduce confusion, ensure consistent benefit delivery, and potentially increase regional mobility while supporting both social equity and ridership goals.

- **Regional Fare Capping**: Regional fare capping implementation across DART, Trinity Metro, and DCTA would transform transit accessibility in the NCTCOG region by ensuring equitable fare optimization regardless of the rider's agency. Currently, while DART offers fare capping through GoPass, the lack of regional integration means riders using multiple agencies don't benefit from unified caps. A coordinated regional approach would eliminate this disparity, ensuring riders never pay more than the cost of a regional pass regardless of their travel patterns across agencies. This enhancement would particularly benefit regular commuters who use multiple transit services, potentially increasing cross-agency ridership while maintaining revenue through increased system utilization.

- **Integrated Commercial Partnership Programs**: Regional programs across DART, Trinity Metro, and DCTA present opportunities for enhanced service delivery through strategic partnerships and targeted initiatives. A coordinated approach to commercial partnerships would build upon existing successful programs like DART's Corporate Pass Program, Trinity Metro's EASYRIDE, and DCTA's Employee Pass Program to create standardized regional offerings. This integration, managed through the GoPass platform, would streamline corporate benefits while encouraging ridership through effective demand management and event support. By developing unified frameworks for both commercial partnerships and targeted programs, the agencies can better serve major employers, support community events, and encourage new ridership while maintaining consistent service standards across the region. Implementing standardized pricing structures and program management protocols would maximize the effectiveness of these initiatives while simplifying administration across all three agencies.

3.2 Fare Payment Systems

The Dallas Fort Worth (DFW) region, part of the NCTCOG region, features a diverse array of transit payment systems designed to accommodate the needs of its growing population. The region relies on an intricate network of public transportation systems. To navigate this network seamlessly, understanding the fare payment landscape is crucial. This comprehensive analysis examines the current fare payment landscape, evaluating both traditional and modern payment solutions implemented across the region. By assessing the benefits and limitations of each payment method, comparing them with global best practices from leading transit agencies worldwide, and considering the unique characteristics of the NCTCOG region, this section aims to provide insights into potential enhancements and innovations that could further improve the regional fare payment ecosystem. Solutions that could strengthen regional integration while maintaining equity and accessibility for all users have explicitly been focused upon.

3.2.1 Current Systems - Benefits and Limitations

The Dallas Fort Worth region's transit fare ecosystem spans multiple systems across DART, Trinity Metro, and DCTA. These agencies employ both traditional and modern payment methods centered on the regional GoPass platform. The landscape includes cash and paper tickets, GoPass Tap contactless cards, mobile ticketing through the GoPass app, digital wallet integration, and account-based solutions. Each payment method offers distinct advantages and challenges within DFW's unique context of geographical spread, multi-agency structure, and diverse ridership. This section examines the benefits and limitations of current payment methods, considering accessibility, efficiency, regional integration, and user experience across the service area. Relevant examples of beneficial Fare Systems have been covered in the ‘Best Practices’ section.

3.2.1.1 Traditional Payment Methods

Payment Methods	DART	Trinity Metro	DCTA
Cash	Accepted – On Buses	Accepted – On Buses	Accepted – On Buses
Paper Tickets/Tokens	Accepted on all Modes	Accepted on all Modes	Accepted on all Modes
Benefits	Familiarity and accessibility; no technology dependence; offline functionality; immediate use; privacy; serves unbanked populations in DFW's Diverse Communities. In the DART system, approximately 40% of bus riders still rely on cash payments, reflecting the significant portion of transit-dependent and unbanked populations who depend on these traditional options. These payment methods provide essential access for riders who may lack bank accounts, smartphones, or comfort with digital technologies, ensuring the transit system remains accessible to all community members regardless of economic status or technological proficiency		
Limitations	Slower boarding times; Higher operational costs; Limited data collection; No fare capping advantage; Lack of integration; Limited fare options, Security risks for operating agencies; Rider inconvenience; Fraud risk; Environmental impact		

Assessment

Key Issues	Critical Implications	Action Needed
• Three separate cash handling systems across agencies • Slower boarding times impacting service efficiency • Limited data for service optimization • High operational costs for cash management • Need to maintain accessibility for cash-dependent riders (40% of DART bus riders) • Technology barriers for unbanked populations and those less familiar with digital payment	• Significant revenue processing expenses • Missed opportunities for rider behavior insights • Reduced operational efficiency • Limited ability to implement fare capping • Restricted regional fare integration potential • Risk of excluding vulnerable populations if cash options are limited	• Maintain current cash/paper options while incentivizing digital adoption • Create an integrated strategy for gradual digital payment transition • Develop fare incentives for contactless payment use • Ensure continued accessibility for unbanked populations • Establish targeted outreach and education for technology-hesitant riders • Explore cash-to-digital conversion options at convenient locations

3.2.1.2 Card-Based Systems

Cards	DART	Trinity Metro	DCTA
Magnetic Stripe Cards	Limited use for specific fare programs	For University Programs and Corporate Partners	Not used
Contactless Smart Cards (RFID)	GoPass Tap card	EASYRIDE Badge (for Corporate Partners)	Not used
Benefits	Magnetic Stripe Cards Lower technology cost per card; Familiar technology to many riders; Simple to replace if lost/damaged; No electronic device required for the user as with phone apps Contactless Smart Cards Faster boarding times; Ability to implement advanced fare policies - fare capping, distance-based fares; Integration with account-based ticketing systems; Supports multiple payment options; Detailed ridership data for service optimization; Supports mobility as a service (MaaS) integration; User Benefits - Auto-reload capabilities, Online account management; Balance protection if lost/stolen; common form of payment		
Limitations	Magnetic Stripe Cards Higher maintenance costs for equipment; Prone to damage and demagnetization; Limited data collection/storage capabilities; Not compatible with modern mobility integration or implement complex fare structures; No protection against card cloning Contactless Smart Cards Higher initial implementation costs; Needs consistent network connectivity; Technology upgrade costs; User adoption challenges - Card acquisition process, Initial learning curve, Limited retail distribution network; Obviates cash option		

Assessment

Key Issues	Critical Implications	Action Needed
• Multiple card systems operating across agencies (GoPass Tap, EASYRIDE) • Legacy magnetic stripe technology is still in limited use • Fragmented RFID implementations • Complex technology transition needs • Varied policy requirements across agencies	• Inefficient regional interoperability • Higher costs from maintaining multiple systems • Missed opportunities for unified data collection • Delayed service improvements • Complicated user experience across agencies	• Standardize on GoPass platform across all agencies • Phase out magnetic stripe systems strategically • Implement an integrated contactless payment approach • Create a coordinated technology transition plan • Develop aligned policies across agencies • Balance technology upgrades with political considerations

3.2.1.3 Mobile and Digital Payments

Media	DART	Trinity Metro	DCTA
Mobile Ticketing Apps	GoPass app	GoPass app; On-Demand (For MicroTransit)	GoPass app; GoZone (For MicroTransit) Transit App (vehicle tracking system for DCTA's fixed-route services)
Digital wallets (Apple Pay, Google Pay)	Accepted	Limited Implementation	Limited Implementation
Benefits	User Convenience - Fast & secure, Increased accessibility; Integration with existing systems (GoPass App being the key driver); Real-time update/information; Simplified account management, Lower operational costs; Easier fare capping; Seamless for regional integration; Detailed ridership data for service optimization The GoPass app has significantly improved the rider experience by providing a centralized platform for most transit services across the region, offering convenient mobile ticketing, trip planning, and real-time updates. This regional alignment initiative has laid a strong foundation for further integration, demonstrating how standardized digital tools can enhance accessibility and simplify travel across multiple transit systems		
Limitations	Technology dependence; Battery reliance; Requires Compatible Devices; Potential for confusion - learning curve for users; Privacy concerns		

Assessment

Key Issues	Critical Implications	Action Needed
• Varying levels of functionality between DART, Trinity Metro, and DCTA mobile platforms • Digital accessibility barriers for users who must navigate different interfaces • Incomplete integration between fixed-route and on-demand services • Inconsistent digital wallet implementation across agencies	• Confusing user experience requiring multiple downloads and account setups • Barriers to seamless regional travel, particularly for occasional riders • Missed opportunities for comprehensive data collection and service optimization • Inability to implement unified regional fare policies, reward programs and promotions	• Integrate all microtransit services (GoZone, Trinity On Demand) directly into GoPass app • Standardize digital wallet acceptance across all three agencies • Develop a unified account system accessible through a single application • Ensure consistent functionality across the regional transit network • Maintain alternative payment options for non-smartphone users • Implement unified regional trip planning with all modes and agencies

3.2.1.4 Account-Based Ticketing

Account	DART	Trinity Metro	DCTA
Individual/ Personal Accounts	GoPass Account-based System Linked to Mobile App	GoPass Account-based System linked to Mobile App (Partial Services)	GoPass Account-based System linked to Mobile App (Partial Services)
Company/ Organization Account	Provided to participating companies	Provided to participating companies	Provided to participating companies
Benefits	Personalized Service - Rider Convenience, Personal accounts, Preferred payment methods, Alerts and language preference, Auto reload facility, Best fare guarantee based on program, Balance protection, Easy management, Fare capping, Centralized management, Sustainable transportation, Bulk purchasing & cost savings		
Limitations	Technology access; Account setup; Privacy concerns; Limited flexibility for company-sponsored programs; Administrative overhead to the company		

Assessment

Key Issues	Critical Implications	Action Needed
• Not all services provided by Trinity Metro and DCTA are covered by the GoPass app • Disconnected corporate program management • Complex user management across the three TAs • Complex corporate program administration	• Fragmented customer experience • Reduced operational efficiency • Underutilized data analytics potential • Ideal fare program implementation across agencies	• Expand GoPass into a unified regional **mobility wallet platform**, integrating all agency accounts, payments, and transit benefits into a single system • Standardize corporate program management through centralized **mobility wallet** administration • Establish regional account management standards • Create a unified user experience

3.2.1.5 Integration of Payment Systems – Regional Fare Integration

The Dallas-Fort Worth region has made significant progress in payment system integration through the GoPass platform, which now serves multiple agencies, including DART, Trinity Metro, and DCTA. The current system makes travel possible through the three TAs, riders can use the GoPass app to buy fares for all three agencies, including regional day passes valid across the entire system. While this collaboration has improved the regional transit experience through mobile ticketing and trip planning capabilities, challenges remain in achieving full integration, for example - although regional passes enable seamless movement across agencies, inconsistencies in fare structures, acceptance across all services/modes, and technological integration still create barriers to a truly frictionless experience. This is a complex situation where riders experience inconsistency in the use of fare media where some means enable regional mobility whereas others dissuade the same, leading to a complex predicament.

Benefits	• **Simplified Fares and Seamless Travel**: Reduced impediments related to different fare structures or transfers between agencies • **Convenience**: One app for all your DFW transit needs, including buses, light rail, commuter rail (TRE), and microtransit • **Cost Savings**: Regional day passes offer a more economical option for multiple journeys • **Fare Product Variety**: Choose from single rides, day passes, and monthly passes to suit travel needs • **Personalized Fare Management**: Account-based ticketing allows for customized options and potential future features like fare capping
Limitations	• **Agency-Specific Passes:** Each agency still offers its own passes and discounts, which might be more cost-effective for frequent riders within a single system. However, riders may struggle to choose the best option for their needs • **Varying Fare Rules:** While fares could be integrated, some service-specific rules (like those for express buses or zones) might still apply • **Technological Consistency:** Although progress has been made, ensuring seamless technology across all agencies for things like open payments is still ongoing

Regional Perspective to Fare Integration

The concept of regional fare integration in the DFW region represents the harmonization of payment systems, fare policies, and service coordination across DART, Trinity Metro, and DCTA to create a seamless transit experience. This approach enables riders to travel across agency boundaries using unified fare products, consistent pricing structures, and integrated payment methods while ensuring equitable access throughout the region.

Regional fare integration in the DFW region, in alignment with Task 4's (Develop Collaborations Between Existing Transit Authorities) vision to implement an integrated fare structure, F2 (Develop and implement a regionally integrated fare structure), requires a comprehensive transformation of payment systems across DART, Trinity Metro, and DCTA. While GoPass provides a foundation for regional connectivity, significant challenges remain in aligning pricing strategies, service levels, and fare products across agencies. Implementing this integrated fare structure must balance local agency needs with regional efficiency, requiring careful consideration of revenue sharing or reciprocity, transfer policies, and fare equity. A thorough architectural review is essential to ensure compliance with payment card industry standards while maintaining system security and reliability across all agencies, supporting the mobility wallet strategy outlined in Task 4 (Develop Collaborations Between Existing Transit Authorities) recommendation, F1 (Provide a regionally integrated and customer-oriented payment experience utilizing a “mobility wallet” strategy).

The technical implementation of regional fare integration will require significant back-office alignment and technology standardization. Current challenges include varying fare collection systems, different validation methods, and inconsistent data management practices across agencies. While GoPass offers a common platform, enhanced integration is needed for seamless operation, including unified payment processing, coordinated settlement systems, and standardized reporting mechanisms. This transformation requires substantial investment in technology infrastructure, careful consideration of implementation complexity, and development of shared operational protocols to ensure successful regional integration while maintaining individual agency operational efficiency.

3.2.2 Best Practices

In the pursuit of efficient, rider-friendly, and innovative fare collection, transit agencies worldwide are adopting cutting-edge technologies and strategies. From contactless payments and open systems to regional integration and equitable fare policies, these best practices transform how people pay for public transportation. The following are some of the key approaches that are shaping the future of fare payment systems.

3.2.2.1 Contactless and Open-Loop Payment Systems

A key trend in modernizing fare collection is the adoption of contactless and open-loop payment systems. Open-loop systems allow riders to pay for transit fares directly using their existing *contactless bank cards or mobile wallets*, eliminating the need for separate transit cards. Transit agencies empower riders to seamlessly tap and pay with ease by implementing contactless payment readers on buses and trains. This speeds up boarding, reduces wait times, and cuts down on fare collection costs. For example, Transport for London's (TfL) successful open-loop system has demonstrated significant benefits. The transition to an open-loop system allowed TFL to reduce their fare collection costs from 15% to 9% of operational costs[11]. The Chicago Transit Authority's Ventra[12] system exemplifies this best practice with its comprehensive approach: *an open payments architecture* that accepts various contactless forms of payment, integration with a retail network for convenient access to fare products, and user-friendly account management tools for balance checks and reloads. This combination of convenience, efficiency, and accessibility enhances the rider experience while streamlining fare collection for the agency.

Key Elements:

- Bank card acceptance
- Mobile payments
- Compatibility with existing validators and other payment systems
- Web/mobile management

3.2.2.2 Focus on Integration and Interoperability

To truly cater to modern transit riders' diverse needs, agencies prioritize accessibility and regional integration within their fare payment systems. This means offering an array of payment options, such as contactless systems, digital wallets, and paper/plastic legacy options, ensuring that everyone can easily access and pay for their journeys. Furthermore, collaborating with neighboring transit agencies to create integrated regional fare systems, like the EZfare system in Ohio, Kentucky, and Michigan, eliminates the complexities of navigating multiple fare structures and promotes seamless travel across a wider area. Transport for London (TfL)[13] serves as a prime example, with its Oyster card providing a single payment system across all modes of transport, complemented by open-loop payment acceptance, automatic fare capping, and integration with contactless bank cards and mobile payment options. This comprehensive approach not only simplifies travel for riders but also streamlines operations and encourages greater use of public transportation throughout the region, which in turn maximizes revenue.

Key Elements:

- Universal acceptance across modes
- Seamless transfers between transit modes and systems
- Automatic best-fare calculation
- Real-time account management

3.2.2.3 Future-Proofing Fare Collection: Scalability, Flexibility, and Data-Driven Optimization

To thrive in the ever-evolving public transportation landscape, fare collection systems must be built with scalability and adaptability at their core. This means adopting a modular design that can quickly scale with ridership growth and seamlessly integrate new technologies as they emerge. Singapore's EZ-Link[14] (Now SimplyGo) card system has successfully adapted to accommodate a wide range of payment technologies over time.

For example, the EZ-Link card started as a simple stored-value card but has evolved to include functionalities like:

Contactless bank card integration: Riders can link their contactless bank cards directly to their EZ-Link accounts, enabling them to pay fares with their preferred bank cards.

Mobile wallet compatibility: EZ-Link is compatible with major mobile wallets like Apple Pay and Google Pay, allowing riders to tap their smartphones to pay for fares.

QR code payments: The system supports QR code payments through mobile apps, providing another convenient option for riders.

This adaptability stems from the system's modular architecture, which allows for the easy addition and removal of payment technologies without requiring a complete system overhaul. This ensures that the fare collection system remains current and can readily adopt new payment methods as they emerge.

Furthermore, flexible pricing models are essential, allowing agencies to introduce new fare structures. While dynamic pricing based on demand presents opportunities for revenue optimization, it also raises significant equity concerns for transit-dependent individuals with lower incomes who may have limited flexibility in their travel times. Any implementation of variable pricing must include robust discount programs and fare capping to ensure these riders aren't disproportionately burdened. The goal should be creating fare structures that balance operational efficiency with equitable access, potentially through time-of-day discounts rather than surcharges or by offering enhanced service during peak periods rather than higher fares.

Data-driven optimization represents another critical component of future-proof fare systems. By tracking passenger flows and usage patterns, agencies can glean valuable insights from fare collection data like price sensitivity across different rider segments, passenger volumes, and origins/destinations. This information can help agencies adjust routes, schedules, and capacity in response to actual demand patterns, ultimately improving service delivery while maintaining equity goals. For example, data might reveal opportunities to implement special discount programs for underserved communities or adjust service frequency based on actual usage rather than assumptions.

Key Elements:
- Future Proofing
- Equitable Flexibility (Fare structures that balance operational needs with accessibility)
- Data-Driven Optimization
- Robust Technology Architecture
- Phased Implementation and performance monitoring

3.2.2.4 Mobility as a Service (MaaS): Integrating Transit into a Seamless Multimodal Ecosystem

To truly elevate the public transportation experience, agencies should strive for Mobility as a Service (MaaS) integration, weaving together various modes of transport into a unified and user-friendly ecosystem. This means integrating fare payment systems with other mobility services, including but not limited to ride-sharing, bike-sharing, and on-demand microtransit, allowing riders to seamlessly plan, book, and pay for multimodal journeys through a single interface. The Los Angeles County Metropolitan Transportation Authority[15] (LA Metro) partnered with the Transit Watch app in 2020 to implement a MaaS ecosystem. The app integrates Metro services with bike-sharing, scooters, and car-sharing services. This simplifies urban mobility, encouraging public transit use while

offering riders greater flexibility and choice. While MaaS integration requires complex partnerships and raises data privacy considerations that must be carefully addressed, the potential benefits are significant. MaaS paves the way for a more efficient, sustainable, and rider-centric transportation future by fostering seamless multimodal travel and improving transit utilization.

Key Elements:
- Unified Payment and Access Platform
- Multi-Modal Service Integration
- Partnership and Data Management Framework
- User-Centric Interface and Pricing Options

3.2.2.5 Rider-Centric Fare Systems: Prioritizing Convenience, Accessibility, and Equity

Elevating the rider experience should be the driving force behind any successful fare payment system. This means prioritizing convenience by offering a diverse array of payment options, from contactless cards and mobile wallets to cash and reloadable transit cards, catering to all preferences and ensuring accessibility for unbanked populations. Minimizing friction is equally crucial, with fast and reliable payment processing that avoids delays and frustration. Clear communication and concise fare information, including pricing, transfer policies, and payment instructions, are paramount in multiple languages and accessible formats. Equity must be woven into the system's fabric, with fare structures and payment solutions that benefit low-income riders and communities of color, such as reduced fare programs and accessible refill stations like those in the Los Angeles TAP card[16] system. By actively seeking customer feedback and incorporating it into system improvements, agencies can ensure that the fare payment experience is efficient, user-friendly, equitable, and inclusive for all riders.

Key Elements:
- Payment Accessibility and Inclusivity
- Friction-Free Transaction Experience
- Clear Communication and User Guidance
- Equity-Focused Design and Feedback

3.2.3 Potential Inclusions for NCTCOG

As the NCTCOG considers its role in enhancing fare payment systems across the region's transit agencies, focusing on solutions that improve user experience, increase operational efficiency, and promote equitable access to public transportation is crucial. Drawing from global best practices and considering the unique needs of the NCTCOG region, the following recommendations aim to create a more seamless, integrated, and user-friendly fare payment ecosystem.

These suggestions build upon the region's fare systems' existing strengths, such as the widely adopted GoPass platform, while introducing innovative elements to address current gaps and future challenges. By implementing these recommendations, NCTCOG can position the North Texas region at the forefront of transit fare technology, enhancing mobility for residents and visitors alike.

3.2.3.1 Contactless and Open-Loop Payment Systems

Building on DART and Trinity Metro's existing contactless payment capabilities, NCTCOG could prioritize a comprehensive regional expansion of open-loop payment systems across all transit agencies. This expansion would enhance the current limited implementations while creating a unified payment ecosystem for the entire region.

Core Components:

1. **System Architecture**
   - Regional payment infrastructure expansion
   - GoPass platform integration
   - Standardized acceptance protocols
   - Interoperability frameworks
2. **Technical Requirements**
   - Multi-agency payment processing
   - Real-time data analytics capabilities
   - Unified validation systems
   - Alternative payment options support
3. **Future Readiness**
   - Scalable system architecture
   - Multi-modal integration capability
   - Third-party payment partnerships
   - Regional mobility integration

Implementation Strategy:

- Expand existing contactless infrastructure
- Maintain parallel systems during the transition
- Deploy to major transit corridors
- Integrate smaller routes and services
- Full regional integration as the final goal

This strategy leverages existing investments while creating a pathway to comprehensive regional payment integration, supporting NCTCOG's broader goals for seamless transit connectivity across the region.

3.2.3.2 Focus on Integration and Interoperability

The NCTCOG region requires a comprehensive approach to integration and interoperability, transforming the current transit payment landscape into a seamlessly connected regional system. While the existing GoPass platform provides one established foundation, stakeholders across the region have varying perspectives on the ideal technical solution. Some advocate for building on existing infrastructure, while others suggest exploring third-party platforms that might offer enhanced capabilities or cost efficiencies. This transformation demands careful evaluation of all options to address diverse stakeholder needs and priorities across DART, Trinity Metro, and DCTA. The goal remains to create a unified system that serves current needs while enabling future innovations, with the final platform selection requiring consensus building among regional partners to ensure long-term success.

This integration requires careful coordination of fare structures, payment processing, and revenue sharing across agencies, supported by a robust technical architecture featuring open APIs and standardized data formats. Singapore's Land Transport Authority[17] provides an exemplary model, demonstrating how unified payment systems can transform regional mobility. While implementation complexities and inter-agency coordination present challenges, the potential benefits for regional mobility and user experience justify the investment.

Core Components:

1. **Regional System Integration**
   - Unified fare structure implementation
   - Standardized payment processing
   - Common and scalable data architecture
   - Cross-agency revenue sharing
2. **Technical Architecture**
   - Open API framework
   - Account-based ticketing expansion
   - Standardized data formats
   - Real-time information exchange
3. **Future Readiness**
   - Multi-modal integration capability
   - MaaS platform preparation
   - Third-party service integration
   - Regional mobility partnerships

Implementation Strategy:

- Leverage existing GoPass infrastructure
- Coordinate agency technology upgrades

- Establish regional data standards
- Enable phased functionality expansion

This approach creates a scalable foundation for seamless regional transit while supporting NCTCOG's vision for integrated mobility across the region.

3.2.3.3 Improving Equity in Fare Systems

NCTCOG could prioritize an equity-centered approach to regional fare policy that ensures transit accessibility across all demographic and socioeconomic groups in the region. This would build on existing agency programs while creating unified standards for fairness and accessibility.

Core Components:

1. **Regional Income-Based Programs**
   - Regional income-based fare structure including coordinated subsidies
   - Unified eligibility criteria
   - Streamlined enrollment process
2. **Demographic Considerations**
   - Standardized youth programs
   - Unified senior discounts
   - Consistent veteran benefits
   - Student fare coordination
3. **Future Readiness**
   - Adaptive fare modeling capabilities in an integrated fare structure
   - Enhanced data analytics for equity monitoring
   - Dynamic program-specific pricing readiness
   - Agency coordination protocols

Implementation Strategy:

- Regional payment assistance
- Partnership development
- Data-driven monitoring
- Simplified fare structure
- Cross-agency program alignment

This framework ensures equitable transit access while maintaining operational efficiency through standardized regional approaches and coordinated implementation across all three agencies.

3.3 Emerging Technologies & Concepts

Public transit systems are at the forefront of technological innovation, embracing a wide array of emerging solutions to address longstanding challenges and meet evolving user expectations. Emerging technologies offer unprecedented opportunities to enhance operational efficiency, improve service quality, and transform passenger experience within public transit. Specifically, advancements in areas like mobile ticketing, contactless payments, and data analytics are revolutionizing how agencies operate and how riders interact with the system. For instance, account-based mobile ticketing apps streamline fare purchasing and validation, while contactless payment systems expedite boarding and reduce dwell times. Furthermore, data analytics platforms can leverage fare collection data to provide valuable insights into ridership patterns, enabling agencies to optimize routes, schedules, and service delivery in response to real-time demand. For NCTCOG, exploring and evaluating these emerging technologies is crucial for shaping the future of transportation in the region. By carefully assessing multiple options within the 'state-of-the-art technologies' mix, suitable technologies can be identified for NCTCOG to address regional transportation needs, improve connectivity, and create a more sustainable and efficient transit network for North Central Texas.

3.3.1 Trend for Public Transit - Benefits and Limitations

The landscape of public transit is rapidly evolving, driven by innovative technologies that promise to enhance efficiency, accessibility, and user experience. This section examines key technological advancements reshaping the sector, from Augmented Reality (AR) and Artificial Intelligence & Machine Learning (AI & ML) to biometric authentication. Each technology brings unique benefits and challenges, reflecting the complex nature of modernizing established transit infrastructure. By exploring real-world applications, advantages, and limitations of these solutions, we gain crucial insights into the future of public transportation. This analysis aims to provide NCTCOG with a comprehensive understanding of the current technological landscape, enabling informed decision-making and strategic planning for more efficient, accessible, and sustainable transit systems.

3.3.1.1 Real-Time Fare Capping - Automatically Applying Best Fare Based on Usage

Real-time fare capping automatically limits the amount a passenger pays for transit services over a given period, ensuring they never pay more than the cost of an unlimited pass. This system benefits frequent riders without requiring upfront pass purchases. Transport for London's fare capping system[18], implemented with contactless payments, automatically caps daily and weekly fares at the price of a Day or Week Travelcard, ensuring passengers always get the best value for their journeys without having to pre-purchase passes. While DART currently offers fare capping on most of its services, Trinity Metro provides the same partially, and DCTA does not have any fare-capping provisions,

implementing a regional fare-capping system would require coordination among all three agencies to standardize how rides are counted and capped across different services, including buses, light rail, commuter rail, and on-demand services.

Benefits	• **Fair Pricing:** Ensures users always get the best value for their travel • **Encourages Ridership:** Removes the need for upfront pass purchases, potentially increasing usage, leading to an increase in revenue
Limitations	• **Revenue Impact:** This may reduce revenue from users who previously overpaid • **System Complexity:** Requires sophisticated back-end systems to implement accurately

3.3.1.2 Microtransit Integration

Microtransit integrates on-demand, flexible transit services with traditional fixed-route systems, filling gaps in service areas and times. This approach improves accessibility and efficiency, particularly in low-density or underserved areas. In the Dallas-Fort Worth region, DART offers microtransit through its GoLink service, which provides point-to-point rides within specific zones, enhancing connectivity to major transit hubs. DCTA operates GoZone, its microtransit service that has seen significant ridership growth, especially in areas where fixed-route services are less feasible. Trinity Metro partners with Via to improve on-demand and paratransit services, expanding transit access across Tarrant County. Microtransit integration presents opportunities for unified fare collection across service types, enabling seamless fare payment and transfer capabilities between microtransit and fixed-route services, potentially through a single regional provider. LA Metro's Metro[19] Micro service in Los Angeles offers on-demand shared rides in specific zones, connecting passengers to major transit hubs and filling first/last mile gaps in the network, demonstrating how microtransit can complement and enhance traditional public transit systems.

Benefits	• **Improved Coverage:** Serves areas not feasible for fixed-route transit • **Increased Ridership:** Attracts users who might otherwise use private vehicles
Limitations	• **Operational Costs:** This can be more expensive per ride than fixed-route services • **Limited Capacity:** May struggle to meet demand during peak times

3.3.1.3 Bluetooth and Geolocation Technologies

Modern transit systems increasingly leverage Bluetooth and geolocation technologies to enhance service delivery and customer experience. New York MTA's implementation of BLE beacons[20] across 269 stations demonstrates the comprehensive potential of this technology, enabling real-time train tracking and laying groundwork for automated fare

collection and personalized notifications. Similarly, TriMet's TransitTracker[21] shows how combining satellite tracking and sensor technology can provide reliable arrival information while maintaining transparency about system limitations. These implementations showcase how strategic deployment of tracking technologies can simultaneously improve operational efficiency and rider experience, while building a foundation for future service enhancements. Both systems exemplify how transit agencies can balance technological innovation with practical implementation to deliver immediate benefits while preparing for future capabilities.
In a similar vein, DART has also made significant strides in leveraging technology to enhance its services. DART has expanded its real-time data sharing to platforms like Google Maps and the Transit app, allowing customers to track vehicle locations, delays, and service changes more easily.

Benefits	• **Enhanced Real-Time Information:** Provides accurate vehicle tracking and arrival predictions • **Improved Service Planning:** Generates valuable data for optimizing routes and schedules
Limitations	• **Battery Drain:** Can impact smartphone battery life for users • **Privacy Concerns:** Continuous location tracking may worry some users

3.3.1.4 AI & ML - Dynamic Pricing & Personalized Fare Recommendations

AI & ML in transit fare systems can enable dynamic pricing and personalized fare recommendations based on usage patterns and system conditions. These technologies optimize revenue while providing users with the best fare options. The Chattanooga Regional Transportation Authority[22] (CARTA) in Tennessee has integrated AI to enhance its public transit system. In 2020, supported by a federal grant, CARTA collaborated with Vanderbilt University and SmartTransit AI to develop a platform that analyzes rider demand, traffic congestion, and vehicle energy use. This approach could be extended to transit fares, offering discounts during off-peak hours, or suggesting optimal fare products based on individual travel habits.

Benefits	• **Optimized Revenue:** Adjusts fares based on demand, potentially increasing agency revenue • **Personalized Offers:** Provides tailored fare options to individual users
Limitations	• **Equity Concerns:** This may disadvantage certain user groups if not carefully implemented • **Complexity:** It can be difficult for users to understand and predict fares

3.3.1.5 Augmented Reality (AR) in Fare Information - AR-Enhanced Ticket Information and Wayfinding

AR technology can overlay digital information onto the real world, providing transit users with interactive fare information and wayfinding assistance. This enhances the user experience by making complex transit systems more navigable. The Moovit[23] app, used in many cities worldwide, incorporates AR features that allow users to point their smartphone cameras at bus stops or stations to see real-time arrival information and route details superimposed on the physical environment, simplifying trip planning and navigation.

Benefits	• **Enhanced User Experience:** Simplifies navigation and ticket information access • **Accessibility:** Can provide visual aids for users with disabilities
Limitations	• **Device Dependency:** Requires users to have compatible smartphones • **Development Costs:** Creating and maintaining AR content can be expensive

3.3.1.6 Internet of Things (IoT) in Fare Collection Smart transit stations

Internet of Things (IoT) in Fare Collection enables smart transit stations to communicate with user devices, provide real-time information, and facilitate seamless fare transactions. IoT can create a more connected and efficient transit experience. In Singapore, the Land Transport Authority[24] (LTA) implements smart sensors and connected systems across its transit network. These IoT devices can track crowd levels, adjust air-conditioning, and potentially integrate with fare collection systems to provide dynamic pricing based on real-time demand.

Benefits	• **Operational Efficiency:** Streamlines fare collection and provides real-time data • **Enhanced User Experience:** Offers improved information and services at stations
Limitations	• **Cybersecurity Risks:** Increased connectivity can create vulnerabilities • **High Implementation Costs:** Requires significant investment in infrastructure

3.3.1.7 Blockchain and Cryptocurrency - Secure, Decentralized Fare Transactions

Blockchain technology can provide secure, transparent, and decentralized fare transactions, potentially reducing fraud and improving interoperability between different transit systems. While not yet widely implemented, the city of Liberstad[25] in Norway has experimented with a blockchain-based payment system called "City Coin" for various municipal services, including public transportation, demonstrating the potential for secure and efficient fare transactions using distributed ledger technology.

Benefits	• **Enhanced Security:** Provides tamper-resistant transaction records • **Interoperability:** This could enable seamless fare payments across different transit systems
Limitations	• **Technological Complexity:** This may be difficult for agencies and users to understand and implement • **Regulatory Challenges:** Cryptocurrency use in public services faces legal hurdles • **Environmental Impact:** Significant energy consumption from blockchain processing could potentially offset transit's environmental benefits

3.3.1.8 Biometric Payment

Biometric payment systems use unique physical characteristics like fingerprints or facial recognition for fare transactions, offering a secure and convenient payment method. While not yet widespread in transit, the Guangzhou Metro[26] in China has piloted a facial recognition payment system at select stations. It allows passengers to pay for their rides by simply looking at a camera, demonstrating the potential for seamless, contactless fare payment using biometric data.

Benefits	• **Enhanced Security:** Reduces fraud risk compared to traditional payment methods • **Convenience:** Enables fast, contactless payments without cards or devices
Limitations	• **Privacy Concerns:** Collection and storage of biometric data raise significant privacy issues • **Technical Challenges:** Accuracy can be affected by environmental factors or changes in appearance

3.3.2 Potential Inclusions for NCTCOG

3.3.2.1 Real-time Fare Capping

Real-time fare capping transforms the transit experience for NCTCOG riders who regularly use multiple services – for instance, combining DART light rail, Trinity Metro buses, and DCTA trains in their daily commutes. This seamless integration automatically optimizes fares across all journey combinations, eliminating the need for riders to understand complex fare structures or pre-purchase the right pass type. The system dynamically tracks usage across all modes and agencies, automatically applying best-fare guarantees whether a rider takes a single DART trip or combines multiple services throughout their day.

The technical implementation must specifically address these multimodal, multi-agency journeys through sophisticated real-time processing. When a rider taps their card or phone on a DART mode of transport and then chooses to transfer to a Trinity Metro

mode of transport (For ex: Once the Silver Line is operational, riders may transfer from DART to TEXRail for travel to Fort Worth), the system should instantly calculate optimal fare combinations across both agencies. This requires robust policies for immediate cross-agency fare recognition, coordinated cap thresholds, and instantaneous account updates. The framework ensures that frequent riders using various combinations of services automatically receive the best fare value without navigating different agency payment systems or fare products.

3.3.2.2 Regional Microtransit Integration

Microtransit integration presents opportunities for unified fare collection across service types in the NCTCOG region, aligning with Task 4 (Develop Collaborations Between Existing Transit Authorities) recommendations to establish an integrated, region-wide microtransit system, C5 (Establish an integrated, region-wide microtransit provider) and explore a single regional provider model, C6 (Co-mingle paratransit and microtransit with the potential for utilizing a single regional provider). DART's successful GoLink program, which achieved 75% connection rates to transit stations and reduced per-rider costs by 60% compared to traditional services, demonstrates this potential. Building on this model and existing services like Trinity Metro On-Demand and DCTA's GoZone service, a regional approach should focus on payment integration through the GoPass platform. DART's experience shows how seamless fare payment between microtransit and fixed-route services can improve rider satisfaction and increase transit accessibility. This integration, potentially through a unified regional provider as outlined in Task 4, would simplify the user experience while optimizing regional mobility options, following DART's proven approach of phased implementation and strong stakeholder engagement. It is likely to enable riders to seamlessly combine traditional transit with on-demand services across jurisdictional boundaries, creating a comprehensive regional mobility network that serves both urban cores and suburban communities through a single interface.

The technical implementation through GoPass would require sophisticated real-time integration of multiple microtransit providers, unified payment processing, and coordinated service area management. By establishing standardized APIs and data-sharing protocols, the system could enable dynamic connections between fixed-route and on-demand services across all participating jurisdictions. DART has already begun this integration work with Trinity Metro, making progress toward bringing Trinity Metro's on-demand services into the GoPass app—an important first step that demonstrates both technical feasibility and institutional willingness to collaborate on regional platform integration. This existing partnership provides valuable implementation experience and a proven foundation upon which to build more comprehensive regional integration. This approach would particularly benefit non-member cities by providing them with a cost-effective way to connect their residents to the broader regional transit

network, potentially serving as a stepping-stone toward fuller transit integration while maintaining local service autonomy.

Trinity Metro's experience with GoPass integration highlights both opportunities and challenges in creating a truly seamless microtransit experience. Working with technology provider Kuba, Trinity Metro has successfully implemented integration that allows riders to plan complete journeys where fixed-route services connect to on-demand options. The GoPass platform now enables sophisticated features such as dynamic trip planning, estimated travel times, and intelligent ride request timing that activates only when the bus or train approaches the connection point. However, integration with microtransit vendor Via has revealed technological limitations that currently prevent the planning of trips that begin with fixed-route service and end with microtransit. These vendor-specific constraints underscore the importance of selecting technology partners with flexible APIs(Application Programming Interface) and comprehensive integration capabilities when implementing regional microtransit solutions.

3.4 Case Studies

3.4.1 SFRTA Mobile Fare Back Office Solution and Regional Transit Mobile Application

The South Florida Regional Transportation Agency (SFRTA) has undertaken a transformative initiative in 2024 to modernize its mobile fare collection system and create a unified regional transit application.

Background	- SFRTA operates a Tri-Rail commuter rail service that serves a complex regional ecosystem with three transit partners: • Miami-Dade Transit (using Cubic Nextfare Back-office system) • Broward County Transit (using GenFare Back-office system) • Palm Tran (using GenFare Back-office system) - 50 daily trains across 19 stations
Implementation Approach	Two-phase modernization strategy: – Implementation of a new Back Office Solution – Complete replacement of current Nextfare integration – Development of a new fare management system with direct SFRTA control – Integration with payment processing and user authentication systems – Development of Regional Transit Mobile Application – Creation of a unified mobile platform for all regional transit partners – Integration with multiple backend systems (Nextfare and GenFare) – Implementation of real-time tracking using GTFS-RT (General Transit Feed Specification - Realtime) – Support for multiple languages (English, Spanish, Creole)
Expected Outcomes	– Unified trip planning across four transit agencies in three counties – Enhanced ability to sell qualified discounts and Employee Discount Program fares – Consolidated purchasing platform for regional transit fares – Improved customer experience through integrated services – Support for unlimited users with free app download
Key Lessons	– Complex multi-agency projects require careful consideration of existing systems – Different backend systems (Nextfare vs. GenFare) necessitate flexible integration approaches – Regional cooperation requires modular design for agency-specific customization – Reciprocity among multiple transit agencies leads to benefitted customers with an easy transit experience

3.4.2 NEORide's EZfare: Multi-Agency Transit Payment Integration

NEORide is an industry organization that transformed public transit accessibility across 7 states by implementing EZfare. This unified payment platform allows seamless fare collection across 34 transit agencies (see Appendix B), pioneering an innovative approach to regional transit coordination since 2014. NEORide* is a prominent example of how transit agencies can achieve technological advancement through regional collaboration and shared resources.

Background	– First multi-state transit payment integration of its kind – Unified platform serving diverse transit agencies – Integration with major mobility apps (Uber, Moovit, Transit) – Focus on equity through multiple payment options – Real-time validation and account-based system
Implementation Approach	– NEORide partnered with Masabi, a technology provider, to develop and launch EZfare, a unified account-based fare payment system. – EZfare consists of three core components: a mobile app for riders to purchase and manage fares, fare validators on buses for ticket redemption, and partnerships with retail vendors to facilitate cash payments for unbanked and underbanked customers. – EZfare system allows riders to buy fares and passes via app (EZfare app or partner apps like Moovit, Transit, and Uber) and redeem them by scanning a barcode on their smartphones.
Results and Metrics	– A longitudinal survey conducted by NEORide and Cleveland State University revealed a 9% increase in EZfare usage among respondents, with approximately 40% of them using the system. – 98.3% of riders found purchasing easier through the app. – 95.4% of riders reported reduced purchase time – 92.9% of riders noted a faster boarding process.
Key Lessons	– Collaboration among multiple agencies is crucial for the success of regional transit integration initiatives. – Addressing the needs of unbanked and underbanked customers is essential for ensuring equitable access to transit services. – Implementing fare-capping policies can further enhance equity and affordability for low-income riders.

*Trinity Metro joined NEORide as they prepared to deploy a new fare collection system across several agencies. Membership in NEORide allowed each participating agency to be involved in future RFPs and have input on which RFPs should be prioritized. However, as Trinity Metro's priorities evolved, it was decided to delay the implementation of the proposed fare collection system, which ultimately led to their decision not to continue with NEORide membership.

4. Overall Evaluation and Potential Implementations

This section presents a comprehensive analysis of key operational aspects affecting transit service delivery across the NCTCOG region. This analysis encompasses critical areas, including safety and security measures, parking management strategies, equity considerations, and regional fare coordination opportunities. Through a detailed examination of current practices, challenges, and potential solutions, this section provides actionable recommendations for enhancing regional transit integration. The focus remains on improving rider experience and system efficiency while maintaining revenue stability through innovative approaches to fare collection, security enhancement, and service delivery. This section emphasizes the importance of balancing regional standardization with local agency needs to ensure sustainable and equitable transit access across the NCTCOG region while drawing out specific recommendations.

4.1 Safety and Security Overview

4.1.1 Considerations and Concerns

Safety and security considerations in the DFW region's transit system extend beyond traditional fare protection measures, encompassing broader challenges that directly impact ridership growth and revenue optimization. While fare enforcement and payment security remain crucial, the region's unique characteristics - including its vast geographic spread, multi-agency operations, and diverse urban-suburban mix - necessitate a comprehensive approach to system-wide safety.

Safety, security, and effective fare enforcement in the DFW region's transit system require a nuanced approach that recognizes each agency's unique challenges. DART, primarily serving a large service across 13 member cities, experiences different security concerns than Trinity Metro and DCTA, which operate in localized urban-suburban environments. This diversity necessitates tailored approaches to fare enforcement and security across the region. While each agency faces distinct challenges, fare enforcement emerges as a critical component of comprehensive security strategy. DART's implementation of Transit Security Officers, combined with fare enforcement personnel, has demonstrated how coordinated enforcement can enhance both revenue protection and overall system security. Trinity Metro and DCTA, operating in different contexts, require customized approaches to fare enforcement that align with their specific operational environments and rider demographics.

The NCTCOG faces several distinct challenges that significantly impact transit operations and rider experience. Homelessness is a continued concern at major transit centers and stations, particularly in downtown Dallas and Fort Worth, creating complex operational challenges that affect both service delivery and public perception. Crime and perception issues vary significantly across the region's diverse socioeconomic landscape,

with certain areas experiencing higher incident rates that influence ridership patterns, especially during evening hours. Behavioral health incidents have emerged as a growing concern, requiring specialized response protocols and partnerships with mental health professionals. These challenges are further complicated by the region's demographic diversity, where varying population densities, income levels, and transit dependency patterns across member and non-member cities create different safety needs and perceptions, ultimately affecting fare program effectiveness and ridership growth potential.

This section explores how safety and security in DART, Trinity Metro, and DCTA's transit systems affect ridership growth and fare collection while addressing the challenges of keeping passengers safe, managing social issues, and coordinating security efforts across the region.

4.1.2 DART Initiatives for Improving Safety and Security

DART's transit security challenges, identified through ongoing monitoring and customer feedback, primarily center around incidents at train platforms and rail vehicles, including assault, larceny/theft, vandalism, and drug offenses. While security metrics show improving trends, customer satisfaction surveys consistently highlight security as a key concern for riders. The system's vast coverage area, diverse ridership, and varying neighborhood characteristics create complex security demands that require both traditional enforcement and innovative social service approaches.

Industry trends indicate a shift from purely enforcement-based security to more comprehensive strategies that integrate technology, design principles, and social services. This aligns with DART's recognition that modern transit security must address not just criminal activity but also quality-of-life issues, social services, and public perception. The industry's move toward customer-focused security measures resonates with DART's strategic approach, emphasizing "peace of mind" as one of the core objectives. Leading transit agencies have demonstrated success with ambassador programs, environmental design improvements, and integrated social service responses - all elements DART has incorporated into its strategy based on peer agency experiences and proven industry practices.

DART has invested substantially in traditional security measures and innovative response programs. The addition of 100 Transit Security Officers has significantly enhanced system-wide coverage, while dedicated elevator attendants at 12 key stations address specific location-based concerns. Technology upgrades include a comprehensive replacement of the Video Management System (VMS) and the implementation of body-worn cameras for Police Officers and Fare Enforcement Officers. DART’s pilot of the DART Cares Program demonstrated a progressive approach to addressing social service

needs while new transit operators and frontline worker protections enhance staff safety. These investments have yielded measurable results: increased arrests due to enhanced presence, decreased response times for high-priority calls, and greater incident reporting by riders and employees who feel more confident in the security response. Notably, the DART Cares team had increased successful interventions while reducing arrests of individuals in mental health crises, demonstrating the effectiveness of this balanced approach to transit security.

4.1.3 Key Insights to Safety and Security in the NCTCOG Region

The Dallas-Fort Worth region faces unique challenges in ensuring the safety and security of its open transit system, characterized by the absence of fare gates or physical barriers. While this design promotes accessibility and efficiency, it necessitates a sophisticated and comprehensive security approach.

Drawing inspiration from successful initiatives like those implemented by DART, the region should prioritize strategies that enhance security while preserving the benefits of the open system. Key recommendations include:

- **Environmental Enhancements**: Develop urban green spaces and improve lighting around transit stations to create more welcoming and secure environments. Transport for London (TfL)[27] invested £4 million in its Urban Greening Program (2018), installing green roofs and walls at stations like Earl's Court. LED lighting upgrades, completed by 2021, improved safety and energy efficiency. TfL also transformed 200+ hectares of land into green spaces, supporting biodiversity and reducing CO2 emissions.
- **Station Activations**: Implement strategic activations within transit stations to increase positive activity and natural surveillance. The Metropolitan Transportation Authority (MTA)[28] in New York implemented strategic station activations with its "Arts for Transit" program, investing $2.6 million annually since 2014. Initiatives include live performances, public art installations like "The Subway Art Tour," and retail pop-ups at Grand Central Terminal. These activations enhance safety, boost engagement, and encourage natural surveillance.
- **Technological Advancements**: Utilize AI-driven video analytics for enhanced surveillance and real-time threat detection. The Bay Area Rapid Transit[29] (BART) in San Francisco implemented AI-driven video analytics in 2020, investing $4.4 million in its "Safe BART" initiative. The system uses AI algorithms to monitor 4,000+ cameras in real-time to detect suspicious behavior, abandoned items, and crowd anomalies, improving threat response and enhancing passenger safety.
- **Behavioral Strategies**: Develop behaviorally informed messaging and communication strategies to promote rider safety and system integrity. Transport for London[30] (TfL) implemented a behaviorally-informed Public Transport Safety campaign focusing on

interrupting passenger mindsets at critical moments to encourage safer behavior throughout their journey.

- **Coordinated Fare Enforcement and Security Presence**: Implementing a comprehensive regional enforcement strategy should build upon existing security infrastructure while enhancing coordination between transit agencies. DART already maintains a robust security operation with 250 licensed peace officers, 110 dedicated fare enforcement officers, and 67 support staff. This established force, combined with Trinity Metro's partnerships with Fort Worth Police Department and DCTA's arrangements with local law enforcement in Denton County, provides a strong foundation for regional security efforts. Drawing from WMATA's[31] successful model, which increased patrols by 70% through law enforcement partnerships and achieved a 300% increase in overall enforcement. WMATA's implementation demonstrates a significant impact: a 14% reduction in crime while simultaneously seeing increased ridership (24% on rail, 15% on bus). Their multi-layered approach, combining fare enforcement with extensive camera networks (30,000+ cameras system-wide) and increased officer presence on vehicles and at stations, creates a comprehensive security framework that both protects revenue and enhances passenger safety.
- **Transit Ambassadors**: Expand and coordinate regional transit ambassador programs by building upon the existing infrastructure of DART's Mobility Ambassador program and Trinity Metro's Envoy program. These existing travel trainers already provide valuable customer assistance as part of their mobility management initiatives, offering a foundation for an enhanced regional approach. The expanded ambassador program would maintain the current travel training functions while adding additional security and customer service responsibilities. These enhanced roles would complement DART's existing initiatives with clean teams and elevator attendants, providing comprehensive visible support at platforms, vehicles, and facilities throughout the region. Following successful models from BART, LA Metro, and SFMTA, ambassadors could be trained in de-escalation, anti-bias response, and emergency medical assistance (including Narcan administration) while offering customer service and fare-checking capabilities. BART's program demonstrated a significant impact, with over 12,000 positive customer interactions in its first year[32]. This recommendation reinforces section O3 (Coordinate regional safety and security efforts) of the Regional Transit 2.0 Task 4 (Develop Collaborations Between Existing Transit Authorities) report.

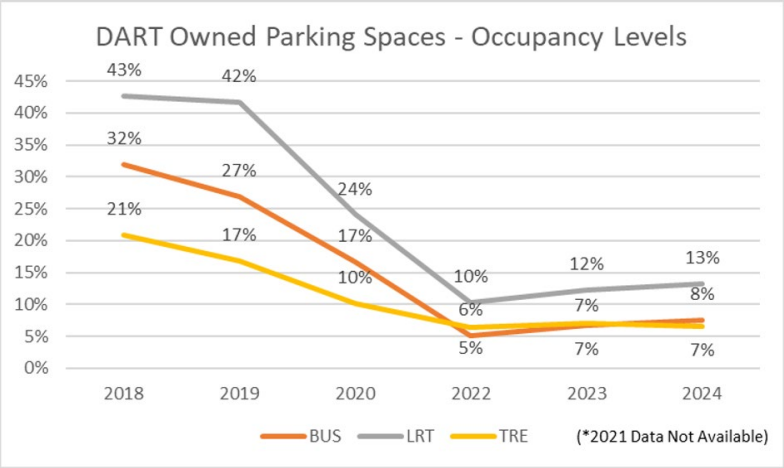
By prioritizing these strategies, the region can cultivate a unified and secure transit experience that fosters rider confidence and drives ridership growth. The success of DART's multi-faceted approach underscores the potential for similar initiatives to benefit Trinity Metro and DCTA, establishing a consistent regional standard for transit security.

This collaborative approach, combining environmental improvements, technological advancements, and behaviorally informed strategies, will not only enhance rider perception but also contribute to a safer and more secure transit system for all.

4.2 Parking Policies from Transit Ridership Lens

In the NCTCOG region, parking policies play a crucial role in attracting and retaining transit riders. Convenient and affordable parking options at transit stations encourage individuals to choose public transportation by bridging the "first-mile/last-mile" gap. This is particularly important in suburban areas with lower population densities, where walking or biking to stations may not be feasible. By providing ample and accessible parking, transit agencies can incentivize ridership, reduce reliance on personal vehicles, and promote a more sustainable and connected transportation network throughout the NCTCOG region.

Exhibit 2: Trend Analysis - DART Parking Facility Utilization Rates (2018-2024)



The DART parking occupancy data from 2018 to 2024 reveals a significant downward trend in parking utilization across all transit modes, highlighting both challenges and opportunities in parking management and transit ridership strategies.

The data shows a dramatic decline in Light Rail Transit (LRT) parking occupancy, falling from 43% in 2018 to just 13% in 2024. Bus facility parking experienced a similar decline, dropping from 32% to 8%, while TRE facilities saw utilization decrease from 21% to 7%. This consistent decline across all modes indicates a broader shift in transit usage patterns, likely accelerated by the COVID-19 pandemic and the rise of remote work. Factors such as continued work-from-home arrangements and increased use of alternative transportation options may contribute to this trend. Given this substantial underutilization of parking assets, DART's approach to parking management needs strategic reconsideration. Rather than focusing on member versus non-member city

access restrictions, the data suggests an opportunity to leverage these underutilized resources to encourage transit ridership growth. This could include innovative approaches such as:

- Implementing flexible parking policies that welcome riders from all areas, regardless of member city status, to maximize existing infrastructure usage.
- Exploring strategic partnerships with surrounding communities to increase transit accessibility and parking utilization.
- To encourage ridership growth, consider targeting paid parking only at high-demand locations like DFW airport stations while maintaining free parking at underutilized facilities.
- Developing comprehensive outreach programs to promote available parking resources and their connection to transit services.
- Converting underutilized parking areas to higher-value uses such as housing, parks, or open-air markets that encourage walking and transit-oriented development.

This data-driven approach suggests that rather than restricting parking access, DART should focus on maximizing the value of these underutilized assets to support regional mobility goals and increase overall system ridership. The consistently low utilization rates provide an opportunity to implement more inclusive parking policies while exploring selective revenue generation opportunities at specific high-demand locations.

4.3 Equity Considerations

While this memo focuses on fare collection strategies and ridership improvement without resorting to fare reductions across the NCTCOG Region. Central to this objective is a commitment to equity, ensuring that the transit system remains accessible and affordable for all riders, regardless of their socioeconomic background or geographic location. The following considerations provide a framework for developing fare collection strategies that prioritize both ridership growth and social equity:

4.3.1 Geographic Equity

- **Minimize Service Area Disparities**: Ensure equitable coverage and frequency of service in all communities, focusing on expanding access in underserved areas.
- **Address Last-Mile Connectivity Challenges**: Implement solutions such as microtransit, bike-sharing programs, and partnerships with ride-hailing services to improve connectivity to transit stations.
- **Promote Fairness in Fare Structures Across Agency Boundaries**: Develop fare policies that avoid penalizing riders who live near service area borders and frequently travel across agency lines.

4.3.2 Socioeconomic Equity

- **Maintain Affordability for Low-Income Riders**: Preserve current fare levels and expand fare assistance programs to ensure affordability for low-income individuals and families.
- **Increase Access for Unbanked Population**: Offer diverse payment options, including cash payments, mobile ticketing, and retail partnerships, to accommodate riders who may not have bank accounts or prefer to pay with cash.
- **Bridge the Digital Divide**: Provide alternative ways to access transit information and services for those without reliable internet access.

4.3.3 Demographic Equity

- **Cater to Diverse Linguistic Needs**: Offer transit information and services in multiple languages to ensure accessibility for all residents of the region.
- **Address Age-Based Needs**: Provide fare discounts and services tailored to the needs of seniors and youth.
- **Promote Cultural Competency**: Train staff to be culturally sensitive and responsive to the needs of diverse communities.
- **Ensure Accessibility for People with Disabilities**: Guarantee that all transit systems are accessible to people with disabilities and provide accommodations for those with special needs.

4.3.4 Operational Equity

- **Maintain Consistent Service Quality Across All Areas**: Ensure that all riders have access to reliable and efficient transit service, regardless of their location.
- **Distribute Resources Equitably**: Allocate resources to ensure all communities can access adequate transit services.
- **Provide Equal Access to Fare Programs**: Ensure that all eligible riders have equal access to fare assistance programs and discounts.
- **Offer Uniform Customer Support**: Provide consistent and helpful customer support to all riders through various channels.

The recommendations outlined in this technical memo are designed to guide the development and implementation of fare-collection strategies that prioritize both ridership growth and equity across the NCTCOG region. By focusing on innovative solutions, regional collaboration, and a deep understanding of the diverse needs of our communities, a transit system can be maintained that is not only financially sustainable but also accessible, affordable, and inclusive for all.

4.4 Regional Fare Strategy - Recommendations for Regional Coordination

Building on the comprehensive analysis presented throughout this technical memo, this section consolidates key recommendations for enhancing regional fare coordination across the NCTCOG region. As the region continues to grow and transit needs evolve, integrated fare strategies become increasingly critical for seamless mobility. The recommendations outlined here address crucial aspects of regional alignment, including fare programs, payment systems, microtransit integration, operational challenges, and parking management. The following recommendations provide a framework for transforming the region's transit fare ecosystem into a more integrated, efficient, and user-friendly system that serves the diverse needs of all regional residents.

4.4.1 Regional Fare Programs

- **Regional Rewards/Loyalty Program:** Implement a comprehensive regional rewards program that transforms the transit experience from transaction-based interactions to a membership-oriented service model. By establishing a unified points-based system across DART, Trinity Metro, and DCTA, this initiative would reward frequent riders while creating a more engaging transit ecosystem that mirrors subscription-based services. This regional approach would eliminate the current fragmentation where no agency offers true loyalty incentives while creating a unified system that particularly rewards multi-agency journeys. The program would expand transit's value proposition through strategic partnerships with local businesses, rideshare companies, and other transportation providers, creating a comprehensive regional benefits ecosystem. This would support both casual and frequent riders through appropriate reward tiers, while generating valuable ridership data to inform service improvements across the NCTCOG region.
  Implementation Considerations
  - Development of regional points accumulation framework
  - Integration with existing GoPass wallet system
  - Implementation of cross-agency reward recognition
  - Establishment of partner network for reward redemption
  - Regional coordination of promotional offerings
  - Integration with new resident relocation incentive program
  - Establishment of expanded partner network with retailers, restaurants, rideshare companies, and airlines
  - Creation of first/last mile connection incentives through transportation partnerships
- **Unified Real-Time Fare Capping:** Building on DART's existing fare capping system and Trinity Metro's partial implementation, a comprehensive regional program would

automatically optimize fares across all agencies by dynamically tracking multi-modal, multi-agency journeys. This integration would eliminate the need for riders to navigate complex fare structures, ensuring they never pay more than the best available fare, regardless of travel patterns. The expansion would remove a significant barrier to seamless regional transit use by making fare optimization automatic and universal, potentially encouraging increased cross-agency ridership through simplified payment experiences.

Implementation Considerations

- Integration of existing agency fare capping infrastructures
- Development of cross-agency fare recognition protocols
- Establishment of coordinated cap thresholds
- Creation of real-time account update mechanisms
- Implementation of backend revenue sharing agreements

- **Integrated Commercial Partnership Programs:** Develop a coordinated regional approach to commercial partnerships that leverages the combined reach of DART, Trinity Metro, and DCTA. Building on existing programs like DART's Corporate Pass Program, Trinity Metro's EASYRIDE partnerships, and DCTA's Employee Pass Program, create standardized regional offerings that enhance access while maximizing value for participating organizations.

  Implementation Considerations

  - Creation of a unified regional partnership framework
  - Establishment of regional pricing structures for corporate partners
  - Standardization of corporate program benefits across agencies
  - Implementation of consistent program management protocols
  - Integration of partnership programs with GoPass platform

4.4.2 Fare Payment System Enhancements

- **Contactless and Open-Loop Payment Systems**: Expand contactless payment infrastructure and prioritize open-loop payment systems across all agencies. This should be fully integrated with the GoPass platform to create a seamless and unified payment ecosystem for the entire region.

  Implementation Considerations

  - Expansion of existing contactless infrastructure
  - Integration with GoPass platform
  - Standardization of payment acceptance across services
  - Maintenance of options for unbanked populations
  - Phased rollout with full regional integration as the final goal

- **Account-Based Ticketing Integration**: · Implement comprehensive account-based ticketing at a regional level, directly supporting Task 4's (Develop Collaborations

Between Existing Transit Authorities) recommendations for both a mobility wallet strategy, F1 (Provide a regionally integrated and customer-oriented payment experience utilizing a "mobility wallet" strategy) and account-based ticketing across all modes, F3 (Offer account-based ticketing (ABT) on all modes of transportation). This integrated system should store multi-agency fare products, payment methods, and travel history in secure mobility wallet accounts, enabling real-time fare processing, automatic fare optimization, and a simplified customer experience across all agencies. This unified approach aligns with Task 4's vision for seamless, account-based fare payment integration across the entire regional transit network.
Implementation Considerations
- Development of a unified regional account platform
- Migration of all agencies to a single account system
- Standardization of corporate program management
- Establishment of regional account management standards

- **Focus on Regional Integration and Interoperability**: Develop a comprehensive approach to integration and interoperability, building on the GoPass platform. This should result in a connected regional system with standardized payment processing, data architecture, and open APIs to support future mobility innovations.
Implementation Considerations
  - Standardized technology requirements for internal operations and vendors
  - Standardized payment processing
  - Common and scalable data architecture
  - Cross-agency revenue sharing
  - Open API framework
  - Standardized data formats
  - Real-time information exchange

- **Improving Equity in Fare Systems**: Prioritize an equity-centered approach to regional fare policy, building on existing programs and creating unified standards for fairness and accessibility. This should include a focus on income-based fare structures, demographic considerations, and accessible payment options for the unbanked population.
Implementation Considerations
  - Regional income-based fare structure
  - Coordinated subsidy programs
  - Unified eligibility criteria
  - Streamlined enrollment process
  - Standardized youth, senior, and veteran programs
  - Technology-enabled accessibility
  - Multi-language support

4.4.3 Microtransit Integration

- **Seamless Microtransit Integration:** Integrate microtransit services, such as DCTA's GoZone, DART's GoLink, and Trinity Metro On-Demand, into the GoPass platform. This will create a unified regional mobility network that bridges gaps between fixed route services and expands access to non-member cities.
  Implementation Considerations
  - Real-time integration of microtransit providers
  - Unified payment processing
  - Coordinated service area management
  - Standardized APIs and data-sharing protocols

- **Standardized Service Delivery:** Standardize service delivery across agencies while respecting local autonomy. This will ensure consistent quality and rider experience across the entire regional microtransit network.
  Implementation Considerations
  - Establishment of regional service standards
  - Development of common performance metrics
  - Implementation of a unified customer service framework
  - Regular inter-agency performance reviews

4.4.4 Addressing Operational Challenges

- **Address Homelessness:** Develop comprehensive strategies to address homelessness at transit centers and stations, including partnerships with social service organizations and targeted outreach programs.
- **Enhance Safety and Security**: Implement a comprehensive approach that protects riders and transit employees while ensuring fare revenue through integrated technology, enhanced enforcement protocols, and coordinated security response. Building on DART's successful initiatives - including the Transit Security Officer program, fare enforcement teams, and DART Cares - develop region-wide standards for consistent protection and revenue security. This multi-layered strategy combines increased security presence for fare inspection with customer-focused programs, supported by technology like camera networks and environmental design principles, to create a secure, revenue-protected transit environment across all agencies.
- **Respond to Behavioral Health Incidents:** Develop specialized response protocols and partnerships with mental health professionals to effectively address behavioral health incidents on the transit system.
- **Address Regional Disparities:** Recognize the diverse needs and challenges across member and non-member cities, tailoring solutions to address specific safety concerns, transit dependency patterns, and socioeconomic factors.

- **Consistent Service Standards:** Create consistent service standards across agencies to ensure equitable access to reliable and efficient transit.
  Implementation Considerations
  - Establishment of a regional homeless outreach team
  - Coordination with county and city social service agencies
  - Development of station-based resource centers at key transit hubs
  - Training for transit staff on compassionate engagement

4.4.5 Parking Management

- **Promote Existing Parking Resources**: Remove parking restrictions, improve wayfinding with digital indicators, and partner with local businesses to promote available transit parking across service areas.
- **Develop Regional Access Solutions**: Develop unified regional parking policies and community partnerships to standardize facility management and increase system-wide transit ridership without restrictive barriers.
- **Implement Strategic Revenue Generation**: Implement selective paid parking at high-demand locations while maintaining free parking elsewhere, with dynamic pricing based on actual usage patterns.
  Implementation Considerations
  - Creation of park-and-ride marketing campaign
  - Data collection and analysis of parking usage patterns across all facilities
  - Development of standardized signage and digital availability indicators
  - Implementation of GoPass app integration for parking information and payment
  - Establishment of business partnerships for shared parking arrangements

4.5 Foreseeable Integration Challenges

As the Dallas-Fort Worth region continues to experience unprecedented growth and development, implementing integrated regional transit solutions faces several significant challenges. These obstacles span technical, financial, operational, political, and organizational domains, reflecting the complexity of aligning multiple transit agencies and jurisdictions across North Texas. Understanding and addressing these challenges is crucial for successfully transforming the region's transit system into a seamless and efficient network.

4.5.1 Technical and Systems Integration Challenge

The integration of hardware and payment processing platforms across multiple transit agencies presents significant technical hurdles. Successful implementation requires compatible backend systems and infrastructure across DART, Trinity Metro, and DCTA - each currently operating distinct legacy systems. This challenge extends beyond basic

compatibility to include real-time data-sharing capabilities, cybersecurity protocols, and seamless integration of various payment methods. The need for sophisticated infrastructure demands high implementation costs for both hardware and software, along with substantial ongoing operational expenses for maintenance and updates. Additionally, managing a complex network of payment industry participants while ensuring consistent system performance adds another layer of complexity to the technical integration process.

4.5.2 Financial and Revenue Management Challenge

Complex digital mechanisms, in addition to agency alignment and a deeper framework into formal intergovernmental agreements, need to be implemented to divide revenue fairly between transit agencies, particularly when riders use multiple systems within a single journey. This creates significant challenges in allocating ticket revenues between multiple operators while maintaining individual agency financial stability. The process requires dedicated staff to track revenues and manage regional sales centers, ensuring accurate and timely distribution of funds. These financial considerations must also account for existing bond obligations and varying funding structures across agencies. The implementation of new revenue-sharing systems demands additional resources for monitoring, reconciliation, and financial reporting, adding to the operational overhead of the regional integration effort.

4.5.3 Political and Jurisdictional Challenge

The member versus non-member city dynamic creates complex political considerations in implementing regional solutions. Member cities that contribute sales tax revenue may resist changes that appear to equalize benefits across contributing and non-contributing jurisdictions. This challenge becomes particularly acute when addressing fare equity and service access across jurisdictional boundaries. The need to balance regional mobility goals with local investment priorities requires careful political navigation and potentially new governance structures to ensure fair representation and decision-making processes.

4.5.4 Organizational Change Management Challenge

Perhaps the most subtle but significant challenge lies in managing the cultural and organizational changes required for successful integration. Each agency has developed its own operational culture, customer service approaches, and administrative procedures over time. Standardizing these practices requires not just policy changes but significant cultural shifts within organizations. This includes managing potential resistance from labor unions, administrative staff, and long-standing institutional practices. The challenge extends to creating unified security protocols, homeless outreach programs, and customer service standards while maintaining employee morale and operational efficiency during the transition period.

5. Summary of Recommendations and Next Steps

This study recommends that DART, Trinity Metro, and DCTA prioritize enhanced regional fare coordination through the implementation of unified rewards programs, integrated payment systems, and coordinated operational approaches. While each agency can pursue certain improvements independently, the greatest benefits will come from collaborative initiatives that create a seamless regional experience for transit users. The evaluation matrix in the later part of this section provides a strategic framework for prioritizing these recommendations, balancing revenue potential, ridership growth, and implementation feasibility to create a comprehensive roadmap for regional fare integration.

5.1 Summary of Recommendations

The following coordinated recommendations are best suited to creating a unified, accessible regional fare system across all transit agencies. This would enhance the rider experience while increasing ridership and revenue generation:

Recommended Initiatives		
Regional Fare Programs		
R1	Regional Rewards/Loyalty Program	A unified points-based system across all agencies transforming transit from transaction-based to membership-oriented, rewarding frequent riders through partnerships with local businesses, rideshare companies, and other transportation providers while generating valuable ridership data.
R2	Unified Real-Time Fare Capping	Automatically optimizes fares by tracking multi-modal, multi-agency journeys, ensuring riders never pay more than the best available fare regardless of travel patterns.
R3	Integrated Commercial Partnership Programs	Coordinated approach to commercial partnerships leveraging the combined reach of all agencies, creating standardized regional offerings for participating organizations with consistent benefits and management.
Fare Payment System Enhancements		
F1	Contactless and Open-Loop Payment Systems	Expansion of contactless infrastructure and open-loop payment systems across all agencies, fully integrated with GoPass to create a seamless regional payment ecosystem.
F2	Account-Based Ticketing Integration	Regional system storing multi-agency fare products and travel history in secure mobility wallet accounts, enabling real-time processing, automatic fare optimization, and simplified customer experience.

F3	Focus on Regional Integration and Interoperability	Comprehensive approach building on GoPass platform to create a connected regional system with standardized processing, data architecture, and open APIs supporting future innovations.
F4	Improving Equity in Fare Systems	Equity-centered regional fare policy with income-based structures, unified eligibility criteria, standardized discount programs, and accessible options for unbanked populations.
Microtransit Integration		
M1	Integration of Microtransit Services	Unifies DCTA's GoZone, DART's GoLink, and Trinity Metro On-Demand into the GoPass platform, creating a cohesive regional mobility network that bridges gaps between fixed routes.
M2	Standardized Service Delivery	Ensures consistent quality and rider experience across the regional microtransit network while respecting local autonomy, with common performance metrics and unified customer service.
Operational Challenges		
O1	Address Homelessness and Behavioral Health	Establish a regional homeless outreach team with mental health professionals, creating station-based resource centers and specialized response protocols while training staff on compassionate engagement techniques.
O2	Enhanced Regional Security Framework	Build on DART's 250-officer police force and fare enforcement teams to develop region-wide security standards, implementing integrated technology, coordinated fare enforcement protocols, and consistent revenue protection measures.
Parking Management		
P1	Optimize Existing Parking Resources	Remove unnecessary restrictions, implement digital availability indicators, and create business partnerships for shared parking arrangements supported by standardized wayfinding and GoPass integration.
P2	Regional Parking Strategy and Revenue Generation	Develop unified policies across agencies while implementing selective paid parking at high-demand locations with dynamic pricing, maintaining free options elsewhere to support transit access.

5.2 Next Steps

To advance the transformation of the regional fare ecosystem, NCTCOG and its transit agency partners must strategically prioritize the recommended initiatives. The following evaluation matrix assesses each recommendation against four critical factors: Revenue Impact, Ridership Growth Potential, Regional Integration Value, and Implementation Complexity. This structured approach enables stakeholders to identify high-value initiatives while recognizing implementation challenges.

The prioritization methodology weighs each factor according to its strategic importance to regional goals. By calculating a comprehensive priority score for each recommendation, decision-makers can develop a phased implementation approach that balances immediate opportunities with longer-term transformative initiatives. This framework also enables transit agencies to allocate resources efficiently while maintaining progress toward a seamless regional transit experience.

Priority Calculation Methodology

Each recommendation is evaluated using a weighted scoring system that assigns different priority weights to the four evaluation factors of Revenue Impact (Factor A), Ridership Growth Potential (Factor B), Regional Integration Value (Factor C), and Implementation Complexity (Factor D). The scoring weights to these factors are assigned on a scale of 0 to 0.25 as follows:

- High Impact/Potential (●) receiving 0.25,
- Medium Impact/Potential (◐) receiving 0.17
- Low Impact/Potential (○) receiving 0.09

The final priority score is calculated using the formula: Priority Score = A + B + C - D, where the implementation complexity weight is subtracted to reflect that higher complexity reduces overall implementation feasibility. Based on the resulting scores, recommendations are classified into three priority tiers:

- High Priority: Recommendations with scores above 0.46
- Medium Priority: Recommendations with scores between 0.26 and 0.46
- Low Priority: Recommendations with scores below 0.26

This tiered approach enables strategic resource allocation, focusing initial efforts on high-impact initiatives while planning for lower priority implementations over time.

Exhibit 3: Evaluation Matrix – Prioritizing Task 7 Recommendations

		Revenue Impact (A)	Ridership Growth Potential (B)	Regional Integration Value (C)	Implementation Complexity (D)	Recommended Priority
Regional Fare Programs						
R1. Regional Rewards/Loyalty Program	Transforms transit into a membership-oriented service with a unified points-based system that rewards frequent and cross-agency travel.	●	●	●	◐	H
R2. Unified Real-Time Fare Capping	Creates automatic fare optimization across all agencies ensuring riders always receive the best fare without manual intervention.	●	●	●	●	H
R3. Integrated Commercial Partnership Programs	Establishes standardized regional offerings for businesses and organizations accessing multiple transit agencies through a single program.	◐	◐	◐	◐	M
Fare Payment System Enhancements						
F1. Contactless and Open-Loop Payment Systems	Expands modern payment options across all agencies with seamless GoPass integration for faster boarding and improved user convenience.	◐	◐	●	●	M
F2. Account-Based Ticketing Integration	Develops a comprehensive regional account system storing fare products and travel history for simplified multi-agency travel.	●	●	●	●	H
F3. Focus on Regional Integration and Interoperability	Creates a connected regional system with standardized processes and open APIs to support current needs and future innovations.	◐	◐	●	●	M
F4. Improving Equity in Fare Systems	Implements income-based fare structures and unified accessibility standards to ensure transit remains available to all populations.	○	●	◐	◐	M
Microtransit Integration						
M1. Integration of Microtransit Services	Unifies on-demand services from all three agencies into the GoPass platform to create a comprehensive regional mobility network.	◐	◐	●	●	M
M2.Standardized Service Delivery	Establishes consistent quality standards and performance metrics across all microtransit services while respecting local needs.	○	●	●	●	M
Operational Challenges						
O1. Address Homelessness and Behavioral Health	Creates coordinated regional response systems for addressing homelessness and behavioral health issues on transit property.	◐	◐	○	◐	L
O2. Enhanced Regional Security Framework	Develops region-wide security standards building on DART's existing capabilities to ensure consistent protection across all agencies.	◐	●	◐	◐	M
Parking Management						
P1. Optimize Existing Parking Resources	Improves utilization of current parking facilities through better information, partnerships, and technology integration.	◐	◐	○	◐	L
P2. Regional Parking Strategy and Revenue Generation	Implements strategic paid parking at high-demand locations while maintaining free options throughout the system.	◐	◐	○	◐	L

6. Conclusion

The Dallas-Fort Worth region's transit landscape presents significant opportunities for enhanced regional integration through coordinated fare collection strategies. The analysis reveals potential for strengthening connectivity across DART, Trinity Metro, and DCTA through unified fare structures and integrated payment systems while maintaining revenue stability. Real-time fare capping, standardized discount programs, and integrated payment solutions emerge as key drivers for improving the rider experience across agency boundaries. The success of the GoPass platform provides a strong foundation for expanding regional payment integration, while the implementation of open-loop payment systems and coordinated back-office operations can further streamline cross-agency travel. These improvements, coupled with standardized fare products and unified promotional strategies, can create a more seamless transit experience that encourages multi-agency ridership.

This pursuit of enhanced regional integration requires careful consideration of the cost implications associated with various technological upgrades and integration efforts. A detailed analysis of both current systems employed by the agencies and potential future systems available in the market is necessary to make informed decisions. This analysis will encompass a comprehensive evaluation of current technology implementations, the feasibility of layered integration without requiring a complete overhaul of existing systems at the transit agencies, and the identification of essential additions or modifications. These elements will need careful assessment, weighing their benefits against associated costs, to ensure optimal resource allocation and maximize returns on investment.

Safety, security, and equitable access form crucial pillars of the regional transit strategy. DART's comprehensive approach to security, combining traditional fare enforcement with innovative social service programs like DART Cares, offers a proven model for regional adaptation. The current parking utilization patterns across the system suggest opportunities for optimizing resources and improving access for both member and non-member cities, particularly through strategic management of high-demand locations like airport stations. Equity considerations remain paramount across the three transit agencies, requiring careful standardization of fare programs for veterans, students, seniors, and other eligible groups. The alignment of discount structures and eligibility criteria between DART, Trinity Metro, and DCTA ensures consistent benefits for all qualified riders regardless of which system they use.

Drawing from successful implementations by SFRTA and NEORide, the Dallas-Fort Worth Metroplex has a unique opportunity to enhance regional connectivity while maintaining agency autonomy through its existing GoPass platform. Following NEORide's proven model and SFRTA's phased modernization approach, the region should prioritize near-term initiatives such as real-time fare capping and standardized discount structures

across DART, Trinity Metro, and DCTA. This systematic integration of payment systems and back-office operations must be supported by clear governance structures and revenue-sharing mechanisms, similar to SFRTA's successful multi-agency coordination model. By taking a measured, phased approach that leverages existing technology investments while preparing for future innovations in fare collection, the NCTCOG region can create a more cohesive transit network that not only serves its growing population but also ensures financial sustainability and operational efficiency across the region.

Appendix A. Summary of Hyperlinked References

1. University of Tennessee demonstrates its significant impact, with agencies implementing monthly fare capping, seeing increases of 3.6% to 4.1% in annual bus ridership. https://www.masabi.com/2023/11/15/proven-to-increase-ridership-the-power-of-monthly-fare-capping/

2. Visa's Future of Urban Mobility Survey indicating that 61% of surveyed public transit riders would increase their transit use with fare capping. https://www.metro-magazine.com/10178668/fare-capping-is-ushering-in-the-future-of-commuting

3. Montreal's STM Merci! Program stands as a pioneering example, where the combination of location-based technology and retail partnerships resulted in a 20-25% increase in transit ridership among participants and generated nearly $100 million in new revenue over three year. https://www.newswire.ca/news-releases/the-stm-launches-a-one-of-a-kind-application-to-thank-its-clients-512380861.html

4. Singapore's current Travel Smart Journeys (TSJ) program showcases an innovative approach to transit incentives. The program rewards commuters with points worth up to 80% of their fare for choosing off-peak travel times or alternative routes. https://landtransportguru.net/travel-smart-journeys-schemes/

5. King County Metro's pioneering ORCA LIFT program in Seattle demonstrates the transformative potential of well-designed discount programs, offering income-based fares that provide a 45% fare reduction to eligible riders across multiple transit agencies. https://seattletransitblog.com/2015/11/13/analysis-orca-lift-on-all-st-express-routes-a-win-win/

6. Los Angeles Metro's comprehensive discount structure includes innovative elements like their LIFE (Low-Income Fare is Easy) program, student, and U-Pass programs, and veteran benefits, resulting in a 32% increase in program enrollment and improved accessibility across their system. https://mynewsla.com/life/2021/11/17/metro-encourages-low-income-riders-to-enroll-in-discounted-fare-program/

7. DART's successful collaboration with Toyota in developing transit-oriented solutions for their North American headquarters in Plano demonstrates the potential of customized corporate partnerships. http://www.transit.dot.gov/sites/fta.dot.gov/files/2020-05/FTA-Report-No.-0164.pdf

8. Bay Area's Clipper BayPass program shows how a unified regional system can serve diverse stakeholders, from major employers to educational institutions and affordable housing communities, through a single integrated platform. https://www.clipperbaypass.com/

9. Luxembourg's groundbreaking nationwide free public transport initiative, implemented in 2020, exemplifies how environmental objectives can drive transformative fare policies, resulting in the use of private vehicles falling by 11% while the number of people using public transportation increasing by 25%. https://www.luxrelo.lu/post/three-years-of-free-ride-luxembourg-celebrates-success-of-bold-public-transport-initiative

10. Denver's "Zero Fare for Better Air" initiative, which provided free public transit for two months to reduce vehicle miles traveled and greenhouse gas emissions. https://raqc.org/rtd-zero-fare-for-better-air-positively-impacted-air-quality

11. Transport for London's (TfL) successful open-loop system has demonstrated significant benefits. The transition to an open-loop system allowed TFL to reduce their fare collection costs from 15% to 9% of operational costs https://www.itskrs.its.dot.gov/success-strategies/executive-briefing/advancements-electronic-fare-payment-contactless-and-open-loop

12. Chicago Transit Authority's Ventra system exemplifies this best practice with its comprehensive approach: *an open payments architecture* that accepts various contactless forms of payment, integration with a retail network for convenient access to fare products, and user-friendly account management tools for balance checks and reloads. https://www.transitchicago.com/ventra-available-to-all-cta-pace-customers/

13. Transport for London (TfL) serves as a prime example, with its Oyster card providing a single payment system across all modes of transport, complemented by open-loop payment acceptance, automatic fare capping, and integration with contactless bank cards and mobile payment options. https://tfl.gov.uk/fares/how-to-pay-and-where-to-buy-tickets-and-oyster/pay-as-you-go/contactless-and-mobile-pay-as-you-go

14. Singapore's EZ-Link (Now SimplyGo) card system has successfully adapted to accommodate a wide range of payment technologies over time. https://ezlink.simplygo.com.sg/

15. The Los Angeles County Metropolitan Transportation Authority (LA Metro) partnered with the Transit Watch app in 2020 to implement a MaaS ecosystem. The app integrates Metro services with bike-sharing, scooters, and car-sharing services. https://www.metro.net/riding/rider-apps/?utm_source=chatgpt.com

16. Los Angeles TAP card system provides reduced fare programs and accessible refill stations. https://www.masstransitmag.com/technology/fare-collection/article/21279141/achieving-equitable-mobility

17. Singapore's Land Transport Authority provides an exemplary model, demonstrating how unified payment systems can transform regional mobility. https://www.smartnation.gov.sg/initiatives/contactless-fare-payment/

18. Transport for London's fare capping system, implemented with contactless payments, automatically caps daily and weekly fares at the price of a Day or Week Travelcard, ensuring passengers always get the best value for their journeys without having to pre-purchase passes. https://www.londontravelwatch.org.uk/useful-information/capping/

19. LA Metro's Metro Micro service in Los Angeles offers on-demand shared rides in specific zones, connecting passengers to major transit hubs and filling first/last mile gaps in the network, demonstrating how microtransit can complement and enhance traditional public transit systems. https://www.metro.net/micro/

20. New York MTA's implementation of BLE beacons across 269 stations demonstrates the comprehensive potential of this technology, enabling real-time train tracking and laying groundwork for automated fare collection and personalized notifications. https://www.pipernetworks.com/news/new-mta-live-subway-map-using-pipers-ble-beacon-data/

21. TriMet's TransitTracker shows how combining satellite tracking and sensor technology can provide reliable arrival information while maintaining transparency about system limitations. https://trimet.org/tools/transittracker.htm

22. The Chattanooga Regional Transportation Authority (CARTA) in Tennessee has integrated AI to enhance its public transit system. In 2020, supported by a federal grant, CARTA collaborated with Vanderbilt University and SmartTransit AI to develop a platform that analyzes rider demand, traffic congestion, and vehicle energy use. https://www.chattanoogan.com/2023/11/2/477621/CARTA-Getting-Major-Federal-Grants-As.aspx

23. The Moovit app, used in many cities worldwide, incorporates AR features that allow users to point their smartphone cameras at bus stops or stations to see real-time arrival information and route details superimposed on the physical environment, simplifying trip planning and navigation. https://moovit.com/press-releases/moovit-unveils-a-smarter-more-personalized-journey-than-ever-before-in-112-countries/

24. Land Transport Authority (LTA) implements smart sensors and connected systems across its transit network. These IoT devices can track crowd levels, adjust air-conditioning, and potentially integrate with fare collection systems to provide dynamic pricing based on real-time demand. https://www.thalesgroup.com/en/worldwide-digital-identity-and-security/iot/magazine/singapore-worlds-smartest-city

25. City of Liberstad in Norway has experimented with a blockchain-based payment system called "City Coin" for various municipal services, including public transportation, demonstrating the potential for secure and efficient fare transactions using distributed ledger

technology. https://www.researchgate.net/publication/350920703_FoBSim_an_extensible_open-source_simulation_tool_for_integrated_fog-blockchain_systems

26. Guangzhou Metro in China has piloted a facial recognition payment system at select stations. It allows passengers to pay for their rides by simply looking at a camera, demonstrating the potential for seamless, contactless fare payment using biometric data. https://www.chinadaily.com.cn/a/201909/10/WS5d7766cea310cf3e3556ad0e.html

27. Transport for London (TfL) invested £4 million in its Urban Greening Program (2018), installing green roofs and walls at stations like Earl's Court. LED lighting upgrades, completed by 2021, improved safety and energy efficiency. https://tfl.gov.uk/info-for/media/press-releases/2024/march/transport-for-london-to-push-ahead-with-green-heating-and-energy-efficiency-in-head-offices-and-depots

28. The Metropolitan Transportation Authority (MTA) in New York implemented strategic station activations with its "Arts for Transit" program, investing $2.6 million annually since 2014. https://new.mta.info/agency/arts-design

29. The Bay Area Rapid Transit (BART) in San Francisco implemented AI-driven video analytics in 2020, investing $4.4 million in its "Safe BART" initiative. The system uses AI algorithms to monitor 4,000+ cameras in real-time to detect suspicious behavior, abandoned items, and crowd anomalies, improving threat response and enhancing passenger safety. https://www.bart.gov/about/reports/surveillance

30. Transport for London (TfL) implemented a behaviorally-informed Public Transport Safety campaign focusing on interrupting passenger mindsets at critical moments to encourage safer behavior throughout their journey. https://transformca.org/a-transformative-approach-to-transit-safety/

31. WMATA's successful model, which increased patrols by 70% through law enforcement partnerships and achieved a 300% increase in overall enforcement. WMATA's implementation demonstrates significant impact: a 14% reduction in crime while simultaneously seeing increased ridership (24% on rail, 15% on bus). https://www.wmata.com/about/news/Metro-enhances-safety-with-increased-police-patrols-on-trains-and-buses.cfm

32. BART's program demonstrated significant impact with over 12,000 positive customer interactions in its first year by training it's staff in de-escalation, anti-bias response, and emergency medical assistance (including Narcan administration). https://www.bart.gov/news/articles/2021/news20210210

Appendix B. Transit Agencies Participating in the NEORide Program

The following list details transit agencies actively involved in the NEORide program. These agencies participate through a variety of projects and collaborations facilitated by NEORide:

Ohio

- Butler County Regional Transit Authority (BCRTA)
- Greater Cleveland Regional Transit Authority (RTA)
- Laketran
- Fare Field County Transit
- Medina County Public Transit
- METRO Regional Transit Authority
- Southwest Ohio Regional Transit Authority (SORTA)
- Portage Area Regional Transportation Authority (PARTA)
- Stark Area Regional Transit Authority (SARTA)
- Central Ohio Transit Authority (COTA)
- Community Action Rural Transit System (CARTS)
- Toledo Area Regional Transit Authority (TARTA)
- Trumbull County Transit
- South East Area Transit (SEAT)
- Western Reserve Transit Authority (WRTA)
- Ashland Public Transit
- Lorain County Transit (LCT)
- Greene CATS Public Transit
- Delaware County Transit
- Licking County Transit
- Greater Dayton RTA
- Richland County Transit (RCT)
- Central Ohio Transit Authority (COTA)
- Perry County Transit

Arkansas

- Rock Region METRO

Indiana

- CityBus

Iowa

- Heart of Iowa Regional Transport Authority (HIRTA)

Kentucky

- Transit Authority of Northern Kentucky (TANK)

Michigan

- Ann Arbor Area Transportation Authority (TheRide)

Pennsylvania

- AMTRAN
- Luzerne County Transportation Authority (LCTA)

Tennessee

- Chattanooga Area Regional Transportation Authority (CARTA)

West Virginia

- Kanawha Regional Transportation Authority (KRT)